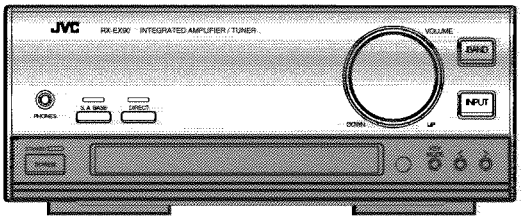
JVC

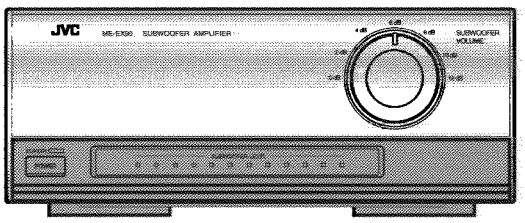
# SERVICE MANUAL

## COMPACT COMPONENT SYSTEM

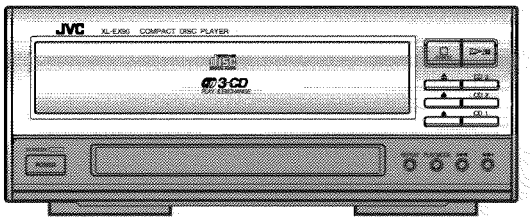
# CA-EX90
# CA-EX90R



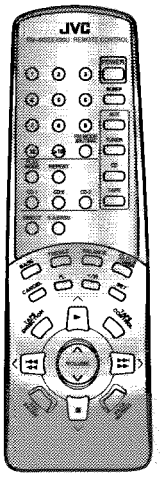
RX-EX90



ME-EX90



XL-EX90



COMPACT disc DIGITAL AUDIO

**Area Suffix**

B ---------- U.K.
E ------ Continental Europe
J ---------- U.S.A.
EE --------- Eastern Europe
EN -------- Northern Europe
US ---------- Singapore
UT ---------- Taiwan
UB ---------- Hong Kong
UF~~~~~~~~~China
U ---------- Other Areas

## Contents


Safety Precaution ---------- 1-2
Compact Component System Unit Constrution ---------- 1-3
Instructions ---------- 1-4~27
Integrated Compact System RX-EX90, RX-EX90R ---------- 2-1
Removal of Main parts ---------- 2-2
Description of Main ICs ---------- 2-5
Standard Scematic Diagram ---------- 2-13
Location of P.C.Board ---------- 2-19
Parts List ---------- 3-1
Integrated Compact System ME-EX90 ------- 4-1
Removal of Main parts ---------- 4-2
Description of Main ICs ---------- 4-4
Standard Scematic Diagram ---------- 4-7
Location of P.C.Board ---------- 4-10
Parts List ---------- 5-1
Integrated Compact System XL-EX90 ------- 6-1
Removal of Main parts ---------- 6-2
Description of Main ICs ---------- 6-12
Standard Scematic Diagram ---------- 6-19
Location of P.C.Board ---------- 6-22
Parts List ---------- 7-1
SP-EX90 ---------- 8-1
Packing and Accessories ---------- 9-1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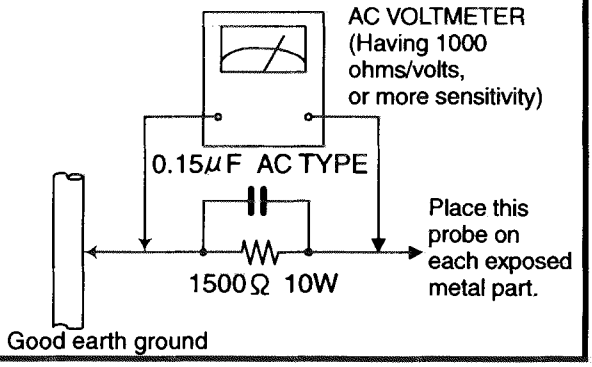
No.20706
Jun.1998

## Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now reverse the plug in the AC outlet and repeat each measurement voltage measured any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

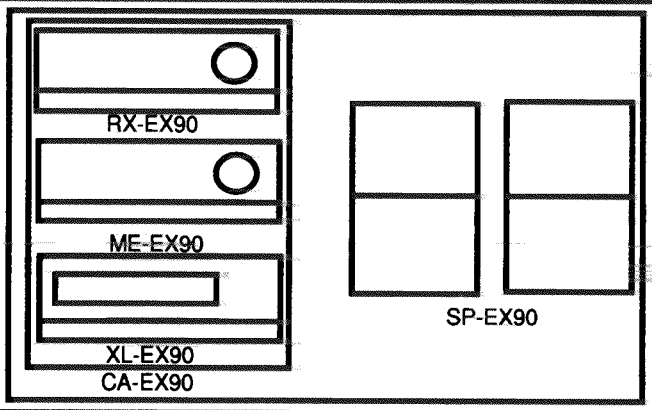
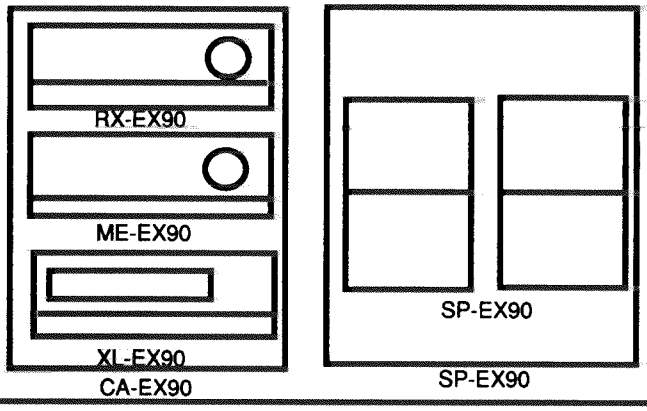
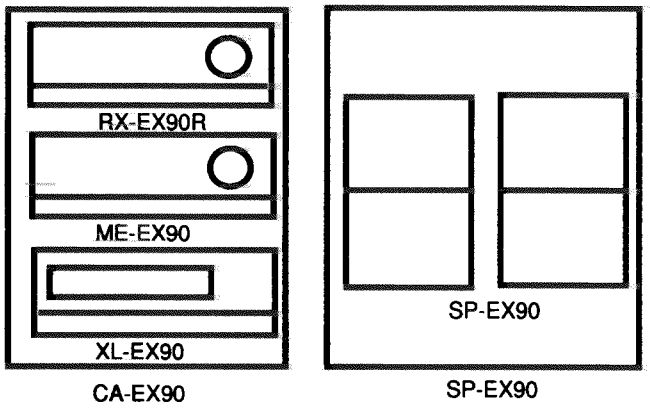
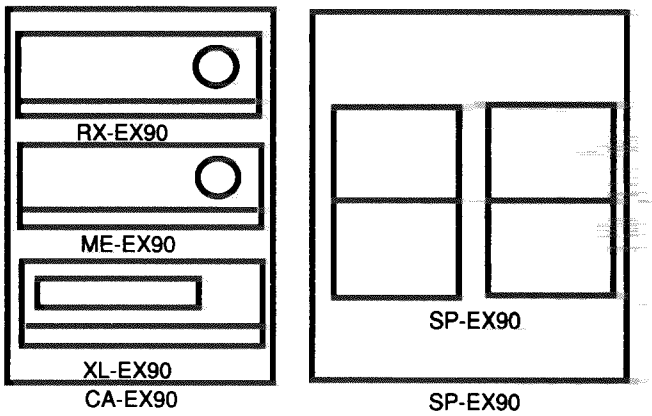



## Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

# COMPACT COMPONENT SYSTEM UNIT CONSTRUTION

| VERSION | UNIT CONSTRUCTION |
|---|---|
| J |  |
| C |  |
| B,E,EN,EE |  |
| U,UF,UT<br>US,UB |  |

CA-EX90/-EX90R

# Instructions

JVC

COMPACT COMPONENT SYSTEM

**CA-EX90** **Consists of RX-EX90, ME-EX90 and XL-EX90.**

INTEGRATED AMPLIFIER/TUNER

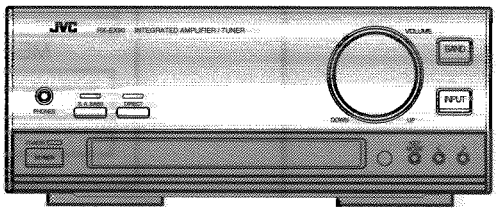
**RX-EX90**

SUBWOOFER AMPLIFIER

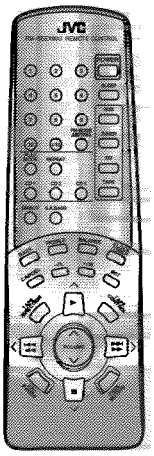
**ME-EX90**

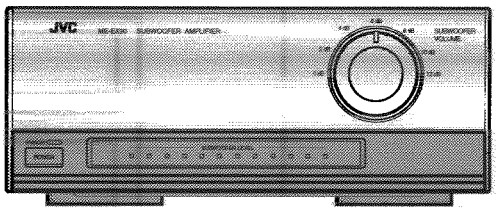
COMPACT DISC PLAYER

**XL-EX90**

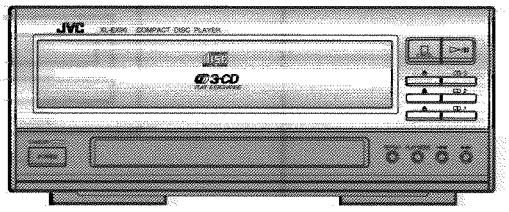


RX-EX90





ME-EX90



XL-EX90

## *INSTRUCTIONS*

COMPACT disc DIGITAL AUDIO

**For Customer Use:**

Enter below the Model No. and Serial No. which are located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. _____

Serial No. _____

LVT0096-001A
[J]

# Table of Contents


Welcome ! ..... 3
Important cautions ..... 3
For safe use, observe the following ..... 3
**Parts Index ..... 5**
Front Panels ..... 5
Displays ..... 7
Rear Panels ..... 9
Remote control ..... 11
**Setting up the System ..... 13**
Supplied Accesories ..... 13
Placement ..... 13
Connections ..... 14
Connecting the Power ..... 17
Remote control batteries ..... 18
Setting the Clock ..... 19
**Amplifier Operations ..... 20**
Turning on the Power ..... 20
Adjusting the Volume ..... 20
Adjusting the Sound ..... 21
Adjusting the Balance ..... 22
Direct Playback ..... 22
Selecting a Source ..... 23
**Tuner Operations ..... 24**
Manual and Automatic Tuning ..... 24
Presetting Stations ..... 26
Listening to Preset Stations ..... 27
**CD Operations ..... 28**
Loading CDs ..... 28
Basic Operations ..... 29
Program Play Mode ..... 31
Random Play Mode ..... 33
Repeat Play Mode ..... 34
Tray Lock ..... 34
**Timer Operations ..... 35**
Introduction ..... 35
Daily Timer ..... 36
Recording Timer ..... 38
Sleep Timer ..... 40
Timer Priority ..... 40
**COMPU LINK ..... 41**
Linked Operation of the Other Optional Components (Compu Link) ..... 41
Shortcut Playback (From the RX-EX90 Amplifier/tuner) ..... 42
Shortcut Playback (From a Source Component) ..... 43
Remote Control of the Other Components ..... 44
Synchronized Recording ..... 46
**Additional Information ..... 48**
Troubleshooting ..... 48
**Specifications ..... 50**




## Welcome !

We would like to thank you for purchasing one of our JVC products. Before connecting this unit to the wall outlet, please read the instructions carefully to ensure that you obtain the best possible performance. If you have any questions, please consult your JVC dealer.

## Important cautions

### Installation of the Unit

- Select a place which is level, dry and neither too hot nor too cold (Between 41°F-95°F or 5°C and 35°C).
- Leave sufficient distance between the Unit and a TV.
- Be sure to place the Unit in a location with good ventilation.
- Do not use the Unit in a place subject to vibrations.
- Do not place the Unit on a carpet.
- Do not place the Unit on top of another heat-generating piece of equipment.

### Power cord

- Do not handle the power cord with wet hands!
- When unplugging the Unit from the wall outlet, always pull the plug, not the power cord.

### Malfunctions, etc.

- There are no user serviceable parts inside. If anything goes wrong, turn off the power immediately. If the same problem reoccurs when the power is turned on once more, turn off the power again, unplug the power cord and consult your dealer.
- Do not insert any metallic object into the Unit.

## For safe use, observe the following

### Avoid moisture, water and dust

Do not set your machine in moist or dusty places.

### Avoid high temperatures

Do not expose your machine to direct sunlight or set near a heating device.

### Do not block the vents

Poor-ventilation may damage your machine. So do not block the vents or put the unit in a poorly ventilated place.

### When you're away

When away on travel or otherwise for an extended period of time, turn off the power and pull the plug from the electrical socket.

### Do not insert foreign matter into the machine

Do not insert wires, hairpins, coins, etc. into your machine.

### Care of the cabinet

When cleaning your machine, use a soft cloth and follow the relevant instructions on the use of chemically-coated cloths. Avoid applying benzene, thinner or other organic solvents and disinfectants. This may cause deformation or discoloring.

### If water gets inside the machine

Turn off the power and pull the plug from the electrical socket, then call the store where you made your purchase. Using the machine in this state may cause a fire or electrical shock.

## Amplifier/tuner front panel

1 **POWER button**
Press to switch the power between ON and STANDBY.
**STANDBY indicator**
Lights up when the power is in STANDBY mode. Turns off when power is ON.

2 **Display**

3 **Remote sensor**

4 **KEY MODE button**
Press to switch the operation mode of the < and > (cursor) buttons.
The PRESET indicator in the display lights in the preset tuning mode.
The PRESET indicator in the display turns off in the auto/manual tuning mode.

5 **<, > (Cursor buttons)**
Press to switch preset channels or for auto/manual tuning.

6 **INPUT button**
Press repeatedly to select the desired input source.

7 **BAND button**
Press to switch between the FM and AM radio bands.

8 **VOLUME control**
Rotate to adjust the volume.
Rotating toward UP increases the volume and toward DOWN decreases it.

9 **DIRECT button and indicator**
Press to turn the direct signal function on or off. This function allows the source signal to bypass the tone control circuitry (BASS, TREBLE, S.A. BASS, and BALANCE) during playback. The indicator lights up when this function is on.

10 **S.A. BASS button and indicator**
Press to turn the bass enhancement function on or off. The indicator lights up when this function is on.

11 **PHONES jack**
Connect headphones with a stereo mini-plug to this jack. When headphones are connected, no sound comes from the speakers and the SUBWOOFER LEVEL indicator on the ME-EX90 does not light.

## Subwoofer amplifier front panel

12 **POWER button**
Press to switch the power between ON and STANDBY.
**STANDBY indicator**
Lights up when the power is in the STANDBY mode. Turns off when power is ON.

13 **SUBWOOFER LEVEL indicator**

14 **SUBWOOFER VOLUME control**
Rotate to adjust the Subwoofer level.
Rotate rightward to increase the level or leftward to decrease the level.

## CD player front panel

15 **POWER button**
Press to switch the power between ON and STANDBY.
**STANDBY indicator**
Lights up when the power is in the STANDBY mode. Turns off when power is ON.

16 **Display**

17 **REPEAT button**
Press to switch repeat play modes (All disc repeat, 1 disc repeat, 1 track repeat or off).

18 **PLAY MODE button**
Press to switch play modes (continuous play, Program play, or Random play).

19 **|◄◄, ►►| buttons**
Press to skip to the beginning of a desired track or press and hold to search in fast forward or fast reverse.

20 **Disc control buttons**
▲: Press to open or close the respective disc tray.
CD 1 to CD 3: Press to start playing the respective CD.

21 **▷/II button**
Press to start or pause CD playback.

22 **□/CANCEL button**
Press to stop CD playback.
Press to clear a track during program mode.

23 **Main tray**
This accommodates three disc trays inside.

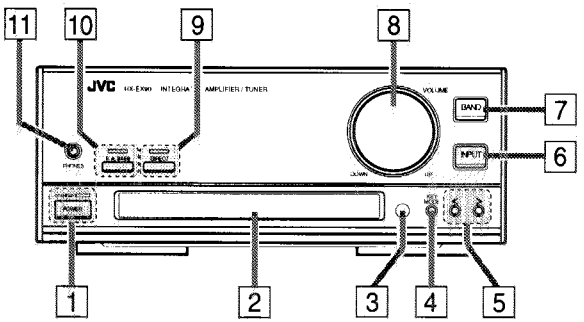




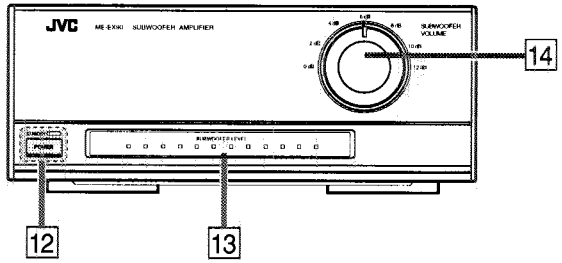
# Parts Index

## Front Panels

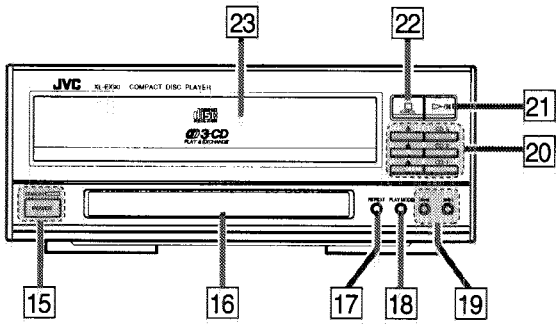
### Amplifier/tuner




### Subwoofer amplifier




### CD player



## Amplifier/tuner display

[1] **Receiving condition indicators**
TUNED: Lights up when radio broadcast is received.
STEREO: Lights up when FM stereo broadcast is received.

[2] **Receiving band indicators**
FM: Lights up when the FM band is selected.
AM: Lights up when the AM band is selected.

[3] **Character display**
Shows the selected source, radio frequency, preset channel number, timer setting item and contents.
Shows the clock in the power STANDBY mode.

[4] **PRESET indicator**
Lights up when < and > (cursor buttons) are set to the preset channel selection mode.

[5] **Volume indicator**
Shows the volume level.

[6] **Timer indicators**
- DAILY: Lights up when the daily timer operation is selected.
- SLEEP: Lights up when the sleep timer operation is selected.
- REC: Lights up when the recording timer operation is selected.

[7] **Source indicators**
The "▮▶" marking on the left of the selected source lights up.

## CD player display

[8] **Play indicators**
▷: Lights up during CD playback.
▯▯: Lights up during pause.

[9] **Disc indicator**
Shows the CD disc number being played or selected.

[10] **Character display**
Shows the track number, play time, program sequence, etc.

[11] **Repeat mode indicators**
Show the repeat mode.
REPEAT ALL: Lights up when all tracks in all the CDs loaded in the main tray or all tracks in the program are played repeatedly.
REPEAT 1 CD: Lights up when a CD is played repeatedly.
REPEAT 1: Lights up when a single track is played repeatedly.

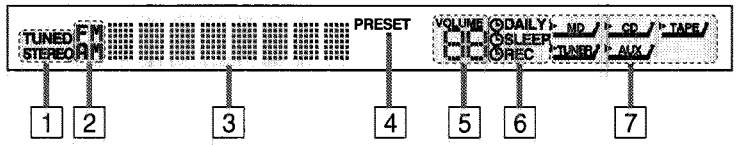
[12] **Play mode indicators**
PROGRAM: Lights up in the program play mode.
RANDOM: Lights up in the random play mode.

[13] **Track indicators**
Shows the number of tracks in the selected or played CD.

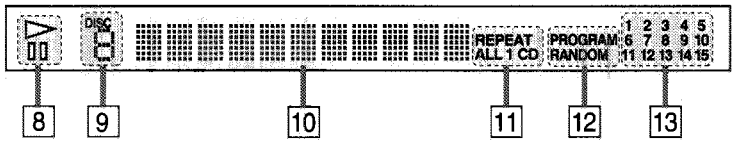


# Displays

### Amplifier/tuner




### CD player



### Amplifier/tuner rear panel

1 **CD input jacks**
Connect to the ANALOG OUT jacks of the CD player.

2 **MD input/output jacks**
Connect to the output/input jacks of the MD recorder.
OUT (REC): Connect to the IN (REC) jacks of the MD recorder.
IN (PLAY): Connect to the OUT (PLAY) jacks of the MD recorder.

3 **TAPE input/output jacks**
Connect to the output/input jacks of the cassette deck.
OUT (REC): Connect to the IN (REC) jacks of the cassette deck.
IN (PLAY): Connect to the OUT (PLAY) jacks of the cassette deck.

4 **AUX input jacks**
Connect to the audio output jacks of a VCR or TV.

5 **SUB-WOOFER OUT jack**
Connect to the input jack of a subwoofer amplifier (ME-EX90).

6 **Power cord**
Connect to a wall power outlet.

7 **SYNCHRO socket**
Connect to the SYNCHRO socket of the subwoofer amplifier(ME-EX90).

8 **SPEAKERS terminals**
Connect speakers with rated impedance of 6 to 16 ohms.

9 **ANTENNA terminals**
Connect the FM and AM antennas.

### Subwoofer amplifier rear panel

10 **COMPU LINK-3 (SYNCHRO) jacks**
Connect each jack with the COMPU LINK-3 (SYNCHRO) jack of another component. Either jack can be used for the connection.

11 **SYNCHRO socket**
Connect to the SYNCHRO socket of the amplifier/tuner (RX-EX90).

12 **SUB-WOOFER IN jack**
Connect to the SUB-WOOFER OUT jack of the amplifier/tuner (RX-EX90).

13 **Power cord**
Connect to a wall power outlet.

14 **SPEAKERS SUBWOOFERS terminals**
Connect speakers with rated impedance of 3 to 16 ohms.

### CD player rear panel

15 **COMPU LINK-3 (SYNCHRO) jacks**
Connect each jack with the COMPU LINK-3 (SYNCHRO) jack of another component. Either jack can be used for the connection.

16 **AC POWER CORD receptacle**
Connect the provided AC power cord.

17 **DIGITAL OUT jack**
Connect to the DIGITAL IN jack of the MD recorder using an optical digital cable. When connecting to the XM-EX90 MD recorder, connect to its DIGITAL IN 1 jack.

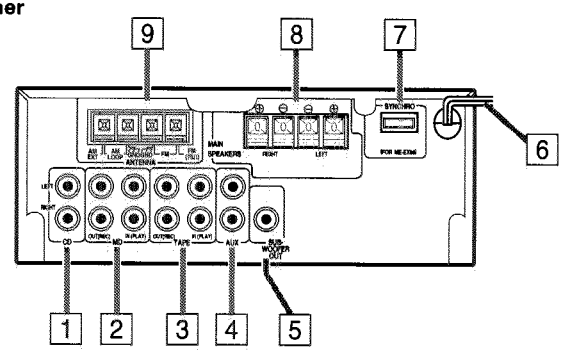
18 **ANALOG OUT jacks**
Connect to the CD input jacks on the amplifier/tuner using the provided audio pin cord.



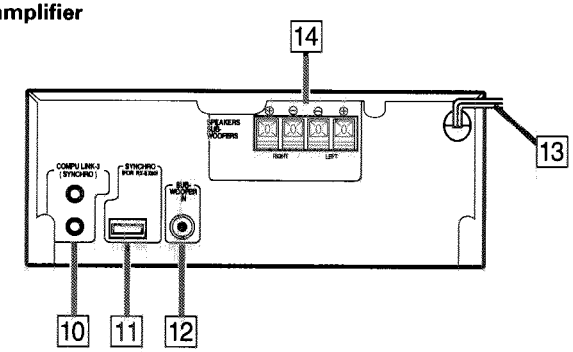


## Rear Panels

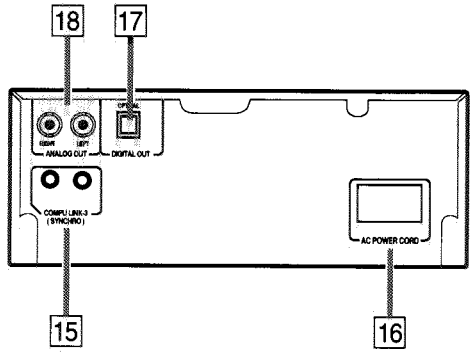
### Amplifier/tuner



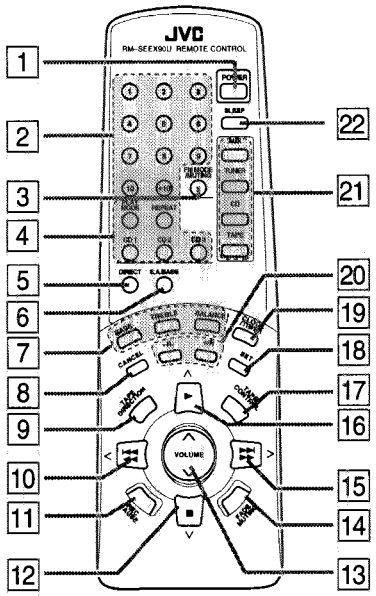

### Subwoofer amplifier




### CD player



## Remote control




### Remote control

1 **POWER**
Press to switch the power between ON and STANDBY.

2 **Number buttons**
- Use to select preset channels when listening to the tuner.
- Use to select tracks after pressing CD, CD1, CD2, CD3 or PLAY MODE.

3 **FM MODE/MUTING**
Press to switch the FM mode between AUTO and MONO.

4 **CD controls**
PLAY MODE: Press repeatdly to select the play mode you desire (PROG RAM, RANDOM, or off (continuous play)).
REPEAT: Press repetedly to select the repeat mode (REPEAT ALL, REPEAT 1 CD, REPEAT 1, or off).
CD1, CD2, CD3: Press to select a CD tray.

5 **DIRECT**
Press to listen to the original sound of the source.

6 **S.A.BASS**
Press to activate Signal Adaptive BASS function for enhancing the low frequencies.

7 **Tone control buttons**
BASS: Press to adjust low frequencies. After pressing BASS, press +/R or –/L to adjust the bass.
TREBLE: Press to adjust high frequencies. After pressing TREBLE, press +/R or –/L to adjust the treble.
BALANCE: Press to adjust the balance. After pressing BALANCE, press +/R or –/L to adjust the balance

8 **CANCEL**
- Press to cancel a timer operation.
- Press to erase a CD program step.



9 **TAPE DIRECTION**
Press to change the tape direction when using the cassette deck.

10 **⏮ ◀◀ (skip back) / <**
- Press to skip or search backward on the CD player after pressing CD,CD1,CD2,CD3, or PLAY MODE.
- Press to rewind on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to select the preset channel after pressing TUNER.

11 **REC PAUSE**
Press to set the cassette deck to record pause mode.

12 **■ (stop) / v**
- Press to stop playback on the CD player after pressing CD,CD1,CD2,CD3, or PLAY MODE.
- Press to stop playback or recording on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to tune manually to a lower frequency after pressing TUNER.

13 **VOLUME**
Press ∧ (up) to increase the volume.
Press ∨ (down) to decreases the volume.

14 **FADE MUTING**
Press to turn the volume all the way down. To restore the volume, press it again.

15 **⏭ ▶▶ (skip forward) / >**
- Press to skip or search forward on the CD player after pressing CD,CD1,CD2,CD3, or PLAY MODE.
- Press to fastforward on the tape deck after pressing TAPE or TAPE CONTROL.
- Press to select the preset channel after pressing TUNER.

16 **▶ (play) / ∧**
- Press to start playback on the CD player after pressing CD,CD1,CD2,CD3, or PLAY MODE.
- Press to start playback on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to tune manually to a higher frequency after pressing TUNER.

17 **TAPE CONTROL**
Press to set the buttons on the remote to operate the cassette deck.

18 **SET**
Press to set the preset channel, timer, clock, etc.

19 **CLOCK/TIMER**
Press to set the timer or clock.

20 **+/R, –/L**
Press to set the BASS level, TREBLE level, BALANCE, timer, clock, etc.

21 **Source buttons**
AUX: press to select the component connected to the amplifier/tuner's AUX jacks as the sound source.
TUNER: press to select the tuner as the sound source and set some buttons on the remote to operate the tuner. Press repeatedly to switch the band (FM or AM).
CD: press to select the CD player as the sound source and make it start playback of a loaded CD. Press to set some buttons on the remote to operate the CD player.
TAPE: press to select the cassette deck as the sound source and make it start playback of a loaded tape. Press to set some buttons on the remote to operate the cassette deck (when using the cassette deck).

22 **SLEEP**
Press to set or release the sleep timer.

**Place the EX series as shown below.**

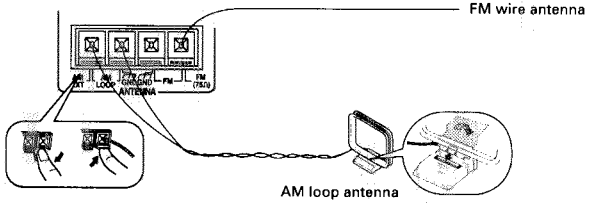
## Connections

### Before Making Any Connections

- Be sure to confirm the locations of the left and right, + and –, and IN and OUT terminals on each component and make connections correctly and firmly. Incorrect or incomplete connections may result in degradation of the stereo effect, or no sound at all. As a general rule, use the red plugs on the connecting cords to connect the right channels and the white plugs to connect the left channels.
- Do not connect the AC power cord until all other connections are complete.

### Connecting the supplied antennas

Connect the supplied FM (wire) antenna and AM loop antenna as shown below.




#### FM antenna

Affix the antenna to a wall (etc.) in a position which provides the best reception.

#### AM loop antenna

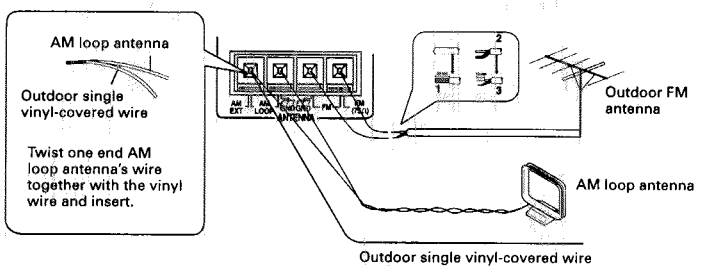
Fold the loop over the base and push in the direction of the arrow.
Place in a position which provides the best reception.

#### CAUTION

To avoid noise, keep antennas away from this unit's metallic parts, the audio pin cords, and the AC power cord.

### Connecting external antennas

- Connect external antennas if reception is not satisfactory with the supplied antennas.


AM loop antenna
Outdoor single vinyl-covered wire
Twist one end AM loop antenna's wire together with the vinyl wire and insert.
Outdoor FM antenna
AM loop antenna
Outdoor single vinyl-covered wire

- To improve reception of FM stations, disconnect the supplied FM wire antenna and connect an 75-Ohm FM antenna wire (not supplied).
- To improve reception of AM stations, connect an vinyl-covered wire (not supplied) to the AM EXT terminal in addition to the supplied AM loop antenna.





# Setting up the System

## Supplied Accesories

Before setting up your system make sure you received all of the following supplied accesories.

AC power cord x 1
Stereo Audio pin cord x 1
Monaural Audio pin cord x1
Compu Link cable x 1
AM loop antenna x1
FM wire antenna x1
Batteries (R6P(SUM-3)/AA (15F)) x2
Remote Control x1
Flat cable x1

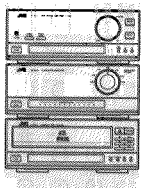
## Cautions for Placement

Place the system in the following manner to for proper ventilation and many years of trouble free use.

Do not place in any of the following ares.

- Near a heater or other heat emmitting appliance.
- In direct sunlight.
- Do not place the CD player on top of the amplifer/tuner.
- In a place warmer than 35°C (or 95°F).
- In a bathroom, kitchen or other area with steam, humidity, or hot water.
- In a place with lots of static electricity or dust.
- In an unstable area.
- Near appliances that receive electronic wave broadcasts, such as a television or tuner.

**When stacking, place the components as illustrated below.**

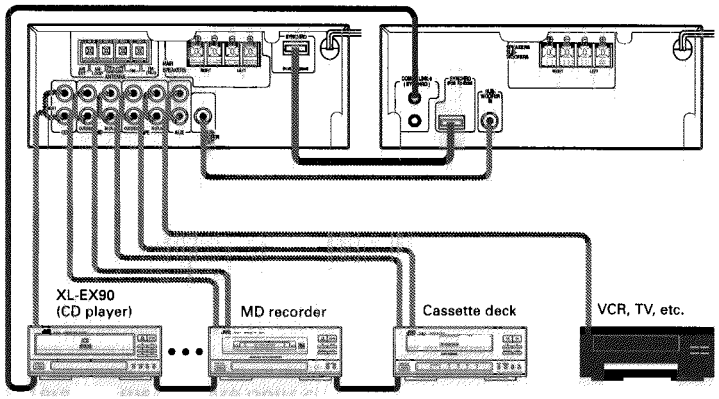


RX-EX90
(Amplifier/tuner)

ME-EX90
(Subwoofer amplifier)

XL-EX90
(CD player)

## Connecting other components




**Audio pin cord**

Be sure to connect jacks with plugs of the same colors for correct L (Left) and R (Right) connections.
Connect this unit's OUT (REC) jacks to the IN (REC) jacks on a MD recorder or cassette deck.
Connect this unit's IN (PLAY) jacks to the OUT (PLAY) jacks on a MD recorder or cassette deck.
Connect this unit's AUX IN jacks to the sound output jacks on your VCR, TV, etc.

**Compu Link cable**

Use Compu Link cables to connect the COMPU LINK-3 (SYNCHRO) jacks of the Optional components.

**Flat cable**

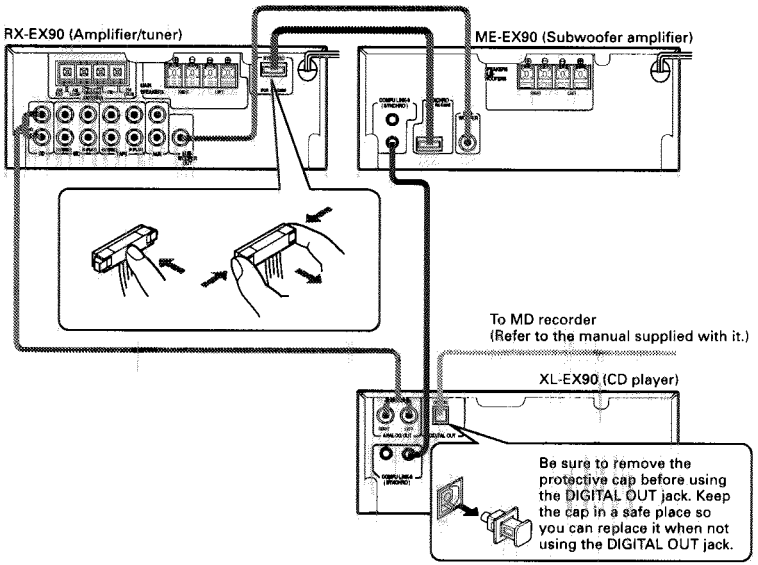
Use to connect the subwoofer amplifier's SYNCHRO socket to the SYNCHRO socket on the RX-EX90 amplifier/tuner.

**Optical digital cable**

Use to connect the DIGITAL OUT jack of the CD player (XL-EX90) and DIGITAL IN 1 jack of the MD recorder.



## Connecting the CD player and subwoofer amplifier


RX-EX90 (Amplifier/tuner)
ME-EX90 (Subwoofer amplifier)
To MD recorder
(Refer to the manual supplied with it.)
XL-EX90 (CD player)
Be sure to remove the protective cap before using the DIGITAL OUT jack. Keep the cap in a safe place so you can replace it when not using the DIGITAL OUT jack.

**Audio pin cord**

**Stereo audio pin cords:**
Use to connect the CD player's ANALOG OUT jacks to the CD input jacks on the RX-EX90 amplifier/tuner.
Also use to connect the subwoofer amplifier's SUB-WOOFER IN jack to the SUB-WOOFER OUT jack on the RX-EX90 amplifier/tuner.
Be sure to connect jacks with plugs of the same colors for correct L (Left) and R (Right) connections.

**Monaural audio pin cord:**
Conect the amplifier/funer's SUB-WOOFER out jack to the subwoofer amplifier's SUB-WOOFER IN jack

**COMPU LINK cable**

Use the supplied COMPU LINK cable to connect one of the CD player's COMPU LINK-3 (SYNCHRO) jacks to either of the COMPU LINK-3 (SYNCHRO) jacks on the ME-EX90 subwoofer amplifier.

**Flat cable**

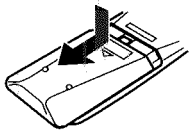
Use to connect the ME-EX90 subwoofer amplifier's SYNCHRO socket to the SYNCHRO socket on the RX-EX90 amplifier/tuner.

**Optical digital cable (not supplied)**

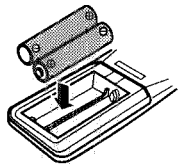
Use to connect the CD player's DIGITAL OUT jack to the optical DIGITAL IN jack of an MD recorder.
When making connections to the MD recorder connect the CD player's DIGITAL OUT jack to the to the MD recorder's DIGITAL IN jack.
Refer to the instructions provided with the MD recorder for details.

## Remote control batteries

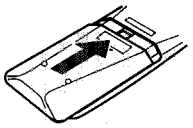
Load the supplied batteries (2) into the remote control.



① Open the battery case.
Push down and pull the lid in the direction of the arrow.



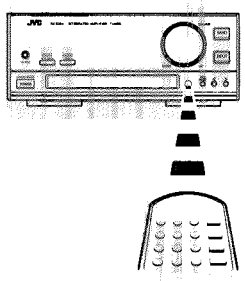
② Load the batteries.
Insert two R6P(SUM-3)/AA(15F) batteries.
Match the polarity (+ and –) of the batteries with the + and – marks inside the battery compartment.



③ Close the battery case.

### Operating the Remote Control

Point the remote control toward the remote sensor on the front panel. The signal may not reach the remote sensor if the remote control is used at an angle, or if there are objects between the remote control and the remote sensor.



**Cautions**

Observe the following to avoid battery leakage or explosion:

- If the range or effectiveness of the remote control decreases, replace the batteries using R6P(SUM-3)/AA(15F) type dry cells.
- Do not use an old battery together with a new one.
- Do not use different types of batteries together.
- Do not disassemble the batteries or subject them to high temperatures, like an open fire.
- Remove the batteries if the remote control will not be used for a long time.

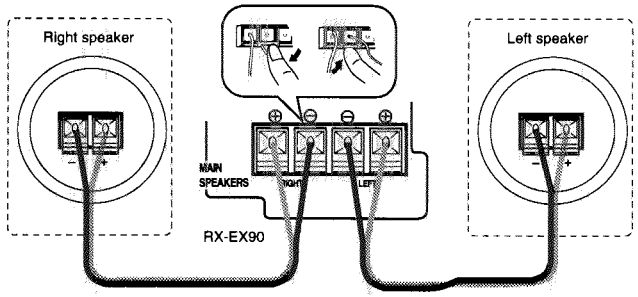


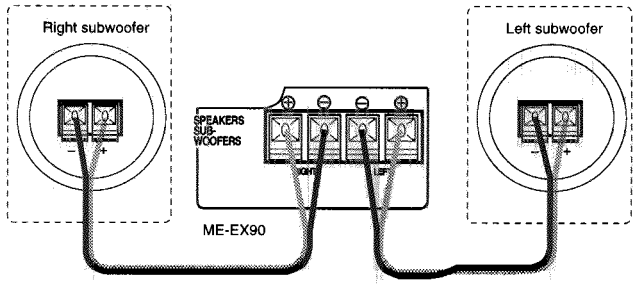


### Connecting the Speakers

Connect the left speaker to the LEFT speaker terminals and connect the right speaker to the RIGHT speaker terminals. Be sure that the speaker cords do not touch the rear panel of this unit. This may damage the unit.
Be sure to connect this unit's + terminals to the + terminals on the speakers, and connect this unit's – terminals to the – terminals on the speakers.

- Refer also to the manual supplied with your speakers.




**IMPORTANT**

- Use speakers with the correct impedance only. The correct impedance is indicated on the back panel.
- If a TV is installed near the speakers, the TV may display irregular colors. In this case, move the speakers farther away from the TV.

## Connecting the Power

**Amplifier/Tuner**

After completing all other connections, connect the power cord to a wall outlet.

**CD player**

After completing all other connections, use the supplied AC power cord to connect the AC POWER CORD terminal on the back of the CD player to a wall outlet.

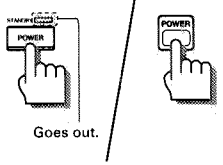
**Subwoofer amplifier**

After completing all other connections, connect the power cord to a wall outlet.

# Amplifier Operations

## Turning on the Power

Front panel / Remote control




Press POWER.
The STANDBY indicator goes out and "HELLO" appears in the display.
ME-EX90 subuwoofer amplifier also turns on.

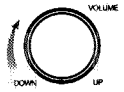
- Pressing POWER of RX-EX90 turns on the source component previously selected.
- Pressing POWER of the other EX90 components (CD player, etc.) also turns on the amplifier/tuner.

### To turn off the power

Press POWER again.
The STANDBY indicator lights up and the display shows "GOOD-BYE", then turns to the clock.
If you have made the Compu Link connection (page 41):
•Other optional components also turns off.

## Adjusting the Volume

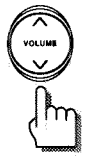
### From the front panel




Rotate VOLUME.
The volume level appears in the display.

- Rotate to the right (UP) to increase the volume, rotate to the left (DOWN) to decrease the volume.
- Rotate VOLUME quickly to make large changes, rotate slowly to make small changes.

### From the remote control




Press VOLUME ∧ or ∨.
Press ∧ to increase the volume, press ∨ to decrease the volume. Hold down to make a continous change.

- The volume can be set between 0 and 50.

**Notes**

- The volume cannot be changes while the unit is in the STANDBY mode.
- Be sure to turn the volume down before setting the unit to the STANDBY mode.

### To mute the sound

Press FADE MUTING.
When you press FADE MUTING, the volume level decreases to 0 (MUTING). Pressing it again restores the volume. To raise the volume, press VOLUME ∧.

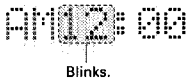


## Setting the Clock

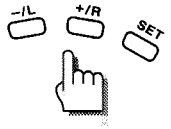
This unit incorporates a clock with a 12-hour display. Be sure to set the clock before operating the unit. The clock can be set either in ON or STANDBY mode of power.

**Use the remote control unit to set the clock.**

① Press CLOCK/TIMER.

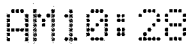



② Set the time of the day.
[1] Set the hour.
Use +/R or –/L to display the appropriate hour, then press SET.
Hold down +/R or –/L to change the hour sequentially.




After setting the hour (before pressing SET)

[2] Set the minutes.
Use +/R or –/L to display the appropriate minute, then press SET.
Hold down +/R or –/L to change the minutes in 10 minutes steps.




- If you set the clock while the power is on, the display returns to the previous information after completing the clock setting.

### To set the clock precisely

After setting the minutes, press SET in sequence with the time announcement on the TV, radio or telephone service. This starts the clock counting from 0 seconds of the set minute.

### Why set the time?

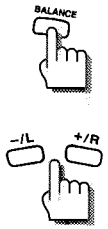
Setting the time allows you to use the daily and recording timer operations.
The daily and recording timer operations cannot be set unless the clock has been set. To correct the previously set time, press CLOCK/TIMER repeatedly (5 times) so that the hour blinks to enter the clock set mode.

**Notes**

- Pressing buttons other than those described above while setting the clock will cancel the clock setup. If this occurs, resume setting the clock from step ①.
- In case of a power failure (or when the power cord has been unplugged) the clock may show the time of the power failure, or a blinking "AM 0:00". If this occurs, reset the clock to the correct time.

## Adjusting the Balance

Use the remote control for these operations.




① Press BALANCE.
② Press –/L or +/R to adjust the balance level.
Press –/L to shift the sound to the left speaker.
Press +/R to shift the sound toward the right speaker.

L----|----R  L----|----R

Moves to the left when you press –/L

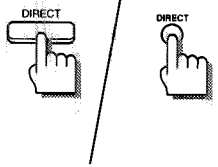
Moves to the right when you press +/R

- Even if you shift the balance all the way to the right or left, the sound does not completely disappear from the opposing speaker.
- The BALANCE cannot be adjusted during DIRECT playback.

## Direct Playback

Use this function to listen to the original sound of the sound source without any sound adjustments.

Front panel / Remote control




Press DIRECT.
"DIRECT" and "ON" appear in the display and the DIRECT indicator lights up.

DIRECT ➡ ON

**To cancel the DIRECT playback**

Press DIRECT again.
"DIRECT" and "OFF" appear in the display and the DIRECT indicator goes out.

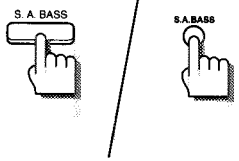
- The S.A.BASS, BASS, TREBLE and BALANCE cannot be adjusted during DIRECT playback.



## Adjusting the Sound

### Emphasizing the bass

Front panel / Remote control




Press S.A.BASS.
"S.A.BASS" and "ON" appear in the display and the S.A.BASS indicator lights up.

S.A.BASS ➡ ON

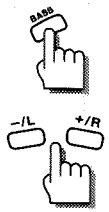
**To cancel the bass emphasis**

Press S.A.BASS again.
"S.A.BASS" and "OFF" appear in the display and the S.A.BASS indicator goes out.

- The S.A.BASS cannot be adjusted during DIRECT playback.

### Adjusting the bass and treble

Use the remote control for these operations.

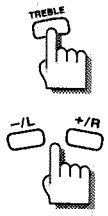



**Adjusting the bass**

① Press BASS.
② Press +/R or –/L to adjust the bass level.
Press +/R to increase the bass.
Press –/L to decrease the bass.

BASS +2

- The bass can be adjusted in 7 steps from –3 to +3.




**Adjusting the treble**

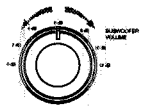
① Press TREBLE.
② Press +/R or –/L to adjust the treble level.
Press +/R to increase the treble.
Press –/L to decrease the treble.

TREBLE+2

- The treble can be adjusted in 7 steps from –3 to +3.

- The BASS, and TREBLE cannot be adjusted during DIRECT playback.

### Adjusting of the subwoofer level



Rotate SUBWOOFER VOLUME.
Rotate rightward to increase the level or leftward to decrease the level.

# Tuner Operations

## Manual and Automatic Tuning

This section shows you how to tune in an FM or AM broadcast.

### From the front panel

① Press BAND to select the band you desire (FM or AM).
Each press of BAND switches the band between FM and AM.
**One touch operation**
When the unit is in the STANDBY mode, press BAND to automatically turn the power on and tune in the last station you listened to.

② Press KEY MODE so that "PRESET" does not appear in the display.
After storing stations in the receiver's preset memory (page 26), you can use the preset tuning feature (page 27).

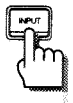
③ Tune in the station you desire.
**For manual tuning**
Press > (for higher frequencies) or < (for lower frequencies) repeatedly to locate the frequency of the station you desire. When a station is received, the TUNED indicator lights up.
**For automatic tuning**
Hold down > or < until the frequencies start to change, then release.
When a station is tuned in, "TUNED" appears in the display and the frequency stops changing. If you know the frequency of the station you want to receive, keep holding > or < until the amplifier/tuner nears the frequency you desire (this prevents the amplifier/tuner from stopping at other intermediate stations).
When a stereo broadcast is received, the STEREO indicator lights up.



## Selecting a Source

Select the input source to be played.

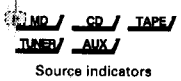
### From the front panel




Press INPUT repeatedly.
The name of the selected source appears in the display. Each press of INPUT switches the input source as shown below.

**TUNER (FM/AM) → MD → CD → TAPE → AUX →**

Example) This indicator lights when MD is selected

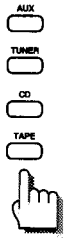



Source indicators

- When the TUNER source is selected, the display shows the frequency of the last received radio station.

**One touch operation**
When the unit is in the STANDBY mode, press INPUT to automatically turn the power on and switch to the last source you listened to.

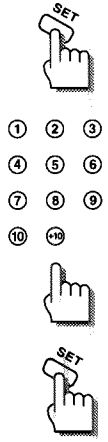
### From the remote control




Press AUX, TUNER, CD, or TAPE.
The respective input source is selected.
Press TUNER repeatedly to select the band (FM or AM).
**One touch operation**
When the power is in the STANDBY mode, press AUX, TUNER, CD, or TAPE to automatically turn the power on and switch to the selected source.
**When using the optional components together with this unit via the Compu Link connection (page 41)**
When a source is selected, the selected source component switches ON automatically. If the component is ready for playback, it also starts to play (see page 42).

## Presetting Stations

Once stations are preset, they can be called up quickly with preset tuning. You can preset a total of 40 stations, either FM or AM.




① Tune in the station you want to preset.
Use the buttons on the remote control to tune in the station; otherwise, following operation will not be possible.

② Press SET.
The unit switches to preset memory mode ("— —" and PRESET blink in the display).
Proceed to step ③ during the 4 seconds that "— —" and PRESET are blinking. After 4 seconds, preset memory mode is released. If this happens, press SET again to reactivate it.

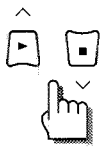
③ Use the number buttons on the remote control to specify the preset number you desire.
The preset number and PRESET blink in the display.
Proceed to step ④ during the 4 seconds that the preset number and PRESET are blinking. After 4 seconds, preset memory mode is released. If this happens, start again from step ②.

④ Press SET again.
"MEMORY" is displayed and the station is stored at the selected preset number.
If another station was previously stored at that preset number, that station is erased and the new station is memorized in its place.





### From the remote control



① Press TUNER to select the band you desire (FM or AM).
In addition to selecting the FM band, this operation also sets the remote control to tuner operation mode. The remote control must be set to the tuner operation mode before proceeding to the following steps, even if the band was previously set to FM using the controls on the front panel.

② Tune in the station you desire.
**For manual tuning**
Press Λ (►) (for higher frequencies) or V (■) (for lower frequencies) repeatedly to locate the frequency of the station you desire. When a station is received, the TUNED indicator lights up.
**For automatic tuning**
Hold down Λ (►) or V (■) until the frequencies start to change, then release. When a station is tuned in, the TUNED indicator lights up and the frequency stops changing. If you know the frequency of the station you want to receive, keep holding Λ (►) or V (■) until the amplifier/tuner nears the frequency you desire (this prevents the amplifier/tuner from stopping at other intermediate stations).

### Stereo and monaural reception

Switching to monaural reception is an effective way to reduce noise when receiving weak FM stereo broadcast.

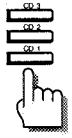
**To switch to monaural reception**
Press FM MODE/MUTING on the remote control so that "MONO" appears in the display. This switches the reception mode to mono. In this mode, stereo broadcasts are also received in mono.

**To switch to stereo reception**
Press FM MODE/MUTING on the remote control again so that "AUTO" appears in the display. This switches the reception mode to auto tuning. When a program is broadcast in stereo the STEREO indicator lights up and you hear the stereo sound. When in monaural, the STEREO indicator goes off and you hear monaural sound.

**Normally, it is recommended to use Automatic tuning. If clear reception is not possible with the supplied antenna, connect an external antenna (see page 14).**

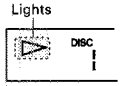
## Basic Operations

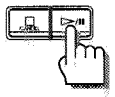
The following operations play all 3 CDs once, one after another.



① Load CDs.
See "Loading CDs" on page 28.

② Press CD 1, CD 2 or CD 3 for the disc you want to play.
The amplifier/tuner automatically switches to the CD input and the CD starts to play.
The ▻ indicator lights up.

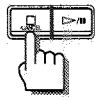


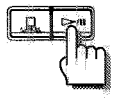
Press ▻/II instead of CD 1, CD 2 or CD 3 to start playing the CD whose disc number appears in the display.

**One touch operation**
When the unit is in the STANDBY mode, press CD 1, CD 2 or CD 3 or ▻/II to automatically turn on the power to the CD player and amplifier/tuner, set the amplifier/tuner to the CD input and start playing the CD.

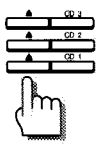
**CD playback sequence**
When 3 CDs are loaded, they are played in one of the following sequences.
**When CD 1 is pressed**
CD 1 ⇨ CD 2 ⇨ CD 3 (then stops)
**When CD 2 is pressed**
CD 2 ⇨ CD 3 ⇨ CD 1 (then stops)
**When CD 3 is pressed**
CD 3 ⇨ CD 1 ⇨ CD 2 (then stops)
* When only 2 CDs are loaded, they play in the same order, but the disc tray without a CD is skipped.



**To stop playback**
Press □/CANCEL.
When playback is stopped, the display shows the total number of tracks and total playing time of the current disc for 4 seconds, then it shows the playing time for track 1.



**To pause playback**
Press ▻/II. The II indicator lights up.
Press again to resume playback from the position where it was paused.



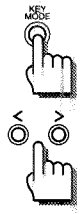
**To remove a CD:**
Press the respective ▲.



## Listening to Preset Stations

This section explains how to tune in preset stations.

**From the front panel**



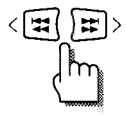
① Press KEY MODE so that "PRESET" appears in the display.

② Press > (for higher numbers) or < (for lower numbers) repeatedly to select the preset you desire.

**From the remote control**

You can tune in the preset stations from the remote control either, by switching through the presets one by one, or by specifying the preset you desire.

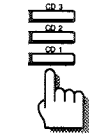
① Press TUNER to select the tuner operations.
In addition to selecting the FM band, this operation also sets the remote control to tuner operation mode. The remote control must be set to the tuner operation mode before proceeding to the following steps, even if the band was previously set to FM using the controls on the front panel.



② Select the preset station you desire.
**To switch through the preset stations one by one**
Press > (►►I ►►) (for higher numbers) or < (I◄◄ ◄◄) (for lower numbers) repeatedly to select the preset number you desire.
**To specify the preset stations**
Use the number buttons to select a preset number.
- For preset number 5, press 5.
- For preset number 15, press +10 then 5.
- For preset number 20, press +10 then 10.
- For preset number 30, press +10, +10, then 10.

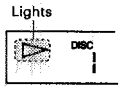
## Basic Operations

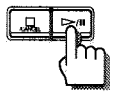
The following operations play all 3 CDs once, one after another.



① Load CDs.
See "Loading CDs" on page 28.

② Press CD 1, CD 2 or CD 3 for the disc you want to play.
The amplifier/tuner automatically switches to the CD input and the CD starts to play.
The ▷ indicator lights up.

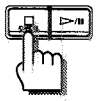


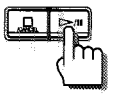
Press ▷/II instead of CD 1, CD 2 or CD 3 to start playing the CD whose disc number appears in the display.

**One touch operation**
When the unit is in the STANDBY mode, press CD 1, CD 2 or CD 3 or ▷/II to automatically turn on the power to the CD player and amplifier/tuner, set the amplifier/tuner to the CD input and start playing the CD.

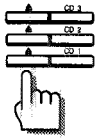
**CD playback sequence**
When 3 CDs are loaded, they are played in one of the following sequences.
**When CD 1 is pressed**
CD 1 ⇨ CD 2 ⇨ CD 3 (then stops)
**When CD 2 is pressed**
CD 2 ⇨ CD 3 ⇨ CD 1 (then stops)
**When CD 3 is pressed**
CD 3 ⇨ CD 1 ⇨ CD 2 (then stops)
- When only 2 CDs are loaded, they play in the same order, but the disc tray without a CD is skipped.



### To stop playback
Press □/CANCEL.
When playback is stopped, the display shows the total number of tracks and total playing time of the current disc for 4 seconds, then it shows the playing time for track 1.



### To pause playback
Press ▷/II. The II indicator lights up.
Press again to resume playback from the position where it was paused.



### To remove a CD:
Press the respective ▲.

### To exchange CDs during playback of another
Press ▲ corresponding to a disc number not shown in the display to open that disc tray and exchange the CD.
When CDs are exchanged during playback, playback stops after playing the last exchanged CD.

### To skip to the beginning of a track
Press ▶▶I once to skip to the beginning of the next track.
Press I◀◀ once to skip to the beginning of the current track.
- Each additional press skips to another track.

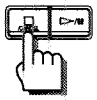
### To check the playing time of a track
Press I◀◀ or ▶▶I during stop mode to display the desired track number. The playing time for that track is also displayed.

### Fast forward / reverse
Press I◀◀ or ▶▶I on the front panel.
For fast forward, press and hold down ▶▶I.
For reverse, press and hold down I◀◀. Release the button when the part you wish to listen to is reached.
- These operations cannot be controlled from the remote control unit.

### Notes
- When CD 1, CD 2 or CD 3 is pressed, if there is no CD in the corresponding disc tray , "NO DISC" appears in the display and the unit enters stop mode.

Example) When disc tray of disc number 2 does not contain CD

- When ▷/II is pressed, if the disc tray corresponding to the disc number shown in the display does not contain a CD, unit checks the other disc trays and automatically plays the first CD it finds. If there are no CDs, the unit enters stop mode when it reaches the last disc tray.



④ Press ⊳/II to start program playback.
Program playback stops automatically after playing all the programmed tracks.

**To check the programmed tracks**

Press I◄◄ or ►►I on the remote control during stop mode.
Pressing ►►I shows programmed track numbers in the programmed order.
Pressing I◄◄ shows them in the reverse order.

- Programmed tracks cannot be checked by pressing I◄◄ or ►►I on the front panel.

**To remove programmed tracks**

Press □/CANCEL (or CANCEL on the remote control) during stop mode.
Each time you press the button, a track is removed from the end of the program.

**If you make a mistake during programming**

Press □/CANCEL (or CANCEL on the remote control) during stop mode repeatedly to remove tracks from the end of the program until you reach the mistake, then reprogram from that point.

**To cancel program playback**

Press PLAY MODE repeatedly during stop mode to select a different play mode.
The program remains in memory even after exiting the program play mode.

- The program is cleared from memory if the power cord is unplugged or there is a power failure.

**When you remove a disc containing programmed tracks**

The tracks from that disc are cleared from the program.

**To play the program repeatedly**

Use the repeat play mode in combination with the program play mode.
For details on the repeat mode, see page 34.



## Program Play Mode

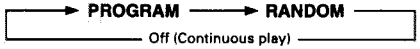
This play mode lets you play tracks from up to 3 CDs in the order you desire.

① Load CDs.
See "Loading CDs" on page 28.

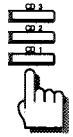
② Press PLAY MODE repeatedly to select PROGRAM.
"PROGRAM" appears in the display and the PROGRAM indicator lights up.

- If some tracks were previously programmed, the disc, track, and program numbers of each track are displayed.

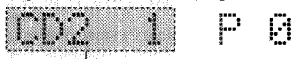
Each time you press PLAY MODE, the play modes switch as follows:




- The CD player must be in stop mode when switching the play modes. If necessary, press □/CANCEL to stop playback before pressing PLAY MODE.

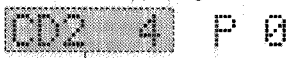


③ Program the tracks.
[1] Press CD 1, CD 2 or CD 3 to select the disc containing the track you want to program.




Example) Selecting disc 2.

[2] Select a track number by pressing I◄◄ or ►►I.




Example) Selecting track 4.

[3] Press PLAY MODE to register the track.
The display stops blinking and lights steadily, and the program number is incremented by 1.

**Notes**

- Repeat steps ① to ③ to program up to 32 tracks. If you attempt to program more than 32 tracks "FULL" appears in the display.
- Perform step ② within 4 seconds of step ①. If 4 seconds elapse between any operations, the unit automatically returns to the previous state.
- When using the remote control, see page 45.

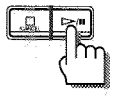
## Repeat Play Mode

This play mode lets you repeat the current track, the current CD, or all the tracks on all the CDs.

① Press REPEAT repeatedly to select the repeat mode.
Each time you press REPEAT, the repeat modes switch as follows:

→ **REPEAT ALL** → **REPEAT 1 CD** → **REPEAT 1** →
Off (mode cancelled)

**REPEAT ALL**
Repeats all the tracks on all CDs.
This mode can be selected in any play mode.
**REPEAT 1 CD**
Repeats all the tracks on the current CD.
This mode can only be selected during the normal (continuous) play mode.
**REPEAT 1**
Repeats the current track.
This mode can be selected in any play mode.

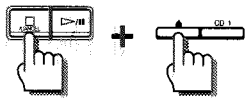


② Press ▷/II to start repeat playback.
**Note:** The repeat mode can also be selected while playing

**To cancel repeat playback**
Press REPEAT repeatedly to turn off the REPEAT indicator.

## Tray Lock

This function electronically locks the main tray so that it can not be opened simply by pressing one of the ▲ buttons.



① Set the power to the STANDBY mode.
If the power is presently ON, press POWER.
② Press ▲ for CD 1 while holding down □/CANCEL.
"LOCKED" appears in the display and the main tray is locked.
- When the main tray is locked, the display shows "LOCKED" and the main tray cannot be opened.
- When a ▲ is pressed during the STANDBY mode, "LOCKED" appears in the display and the unit remains in the STANDBY mode.

**To unlock the tray**

Repeat steps ① and ② above.
"UNLOCKED" appears in the display and the main tray is unlocked.
- Pressing a ▲ opens the selected tray.
- When a ▲ is pressed during the STANDBY mode, the power is turned on and the selected tray opens automatically.

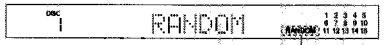




## Random Play Mode

This play mode lets you play tracks from up to 3 CDs at random. You can enjoy listening to the tracks in a different order each time.

① Load CDs.
See "Loading CDs" on page 28.
② Press PLAY MODE repeatedly to select RANDOM.
"RANDOM" appears in the display and the RANDOM indicator lights up.

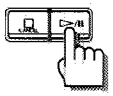



Lights

Each time you press PLAY MODE, the play modes switch as follows:

→ **PROGRAM** → **RANDOM** →
Off (Continuous play)

- The CD player must be in stop mode when switching the play modes. If necessary, press □/CANCEL to stop playback before pressing PLAY MODE.



③ Press ▷/II to start random playback.
Random playback stops automatically after playing each track once.
- The CD player creates an order so that no tracks will be repeated.
- Random playback stops if the main tray is opened.

**To cancel random playback**
Press PLAY MODE repeatedly during stop mode to select a different play mode.

**To play the track at random repeatedly**
Use the repeat play mode in combination with the random play mode. The tracks are played again in a different order after playing each track once.
For details on the repeat mode, see page 34.

# Timer Operations

## Introduction

This unit incorporates three different timers.
Use the remote control for timer settings.

The timer can also be used to operate the optional components are connected to this unit.
To operate the optional components using the timer, be sure Compu Link cables are connected between the COMPU LINK-3 jacks on each component.

**DAILY timer (Wake-up timer, page 36)**

The daily timer operates every day at the same time and can be used as an alarm clock.

- Specify the start time (power ON), the end time (power STANDBY), the source you want to hear, and the volume.

**REC timer (Recording timer, page 38)**

This timer operates only once and allows you make an unattended recording at a preset time.

- Set the time you want the recording to start (power ON), the time you want the recording to end (power STANDBY), and the source to be recorded (radio station).

**SLEEP timer (Sleep timer, page 40)**

Use this timer when you want to fall asleep listening to music.

- Specify how long you want to listen. When the specified period has elapsed, the power automatically switches to the STANDBY mode.

**Notes:**

- Be sure to set the clock before setting the timer.
- Timer sets are stored in memory until they are changed.
- Timer settings may be erased if the power cord is unplugged or if there is a power failure. The timer memory provides for about 2–3 days of backup, but if the settings are lost, please reset them.

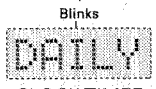


## Daily Timer

Use the remote control to set this timer. It can be set during either power ON or STANDBY.
Be sure to set the clock before attempting this operation.

① Press CLOCK/TIMER to display "DAILY".

Blinks

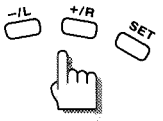



Blinks

② Press CLOCK/TIMER again.
"ON" appears in the display.

Blinks

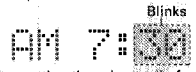
③ Set the start time (ON).




[1] Set the hour.
Use +/R or –/L to display the appropriate hour, then press SET.
Hold down +/R or –/L to change the hour sequentially.

[2] Set the minutes.
Use +/R or –/L to display the appropriate minute, then press SET.
Hold down +/R or –/L to change the minutes in 10 minutes steps.

Blinks



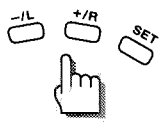

**After setting the minutes (before pressing SET)**

④ Set the end time (OFF).
Set the end time (OFF ) in the same way you set the start time (ON).

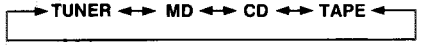
Blinks

**After setting the minutes (before pressing SET)**

⑤ Select the source to be played when the timer activates.




Press +/R or –/L repeatedly to select the source, then press SET.
Each time +/R or –/L is pressed, the source switches as follows.




**When selecting TUNER**
Press +/R or –/L repeatedly to select desired preset channel, then press SET.

**When selecting MD**
Press +/R or –/L repeatedly to select desired track number, then press SET.

- You can select any track number from 1 to 20.
- Pressing SET without selecting a track starts playback from the first track of the MD.

## Recording Timer

Use the remote control to set this timer.
It can be set during either power ON or STANDBY.
Be sure to set the clock before attempting this operation.

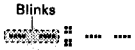
① Press CLOCK/TIMER 3 times to display "REC".

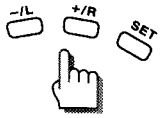
Blinks

Blinks

② Press CLOCK/TIMER again.
"ON" appears in the display.

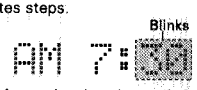
Blinks




③ Set the start time (ON).
[1] Set the hour.
Use +/R or –/L to display the appropriate hour, then press SET.
Hold down +/R or –/L to change the hour sequentially.
[2] Set the minutes.
Use +/R or –/L to display the appropriate minute, then press SET.
Hold down +/R or –/L to change the minutes in 10 minutes steps.

Blinks

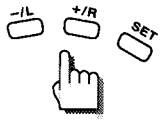



**After setting the minutes (before pressing SET)**

④ Set the end time (OFF).
Set the end time (OFF) in the same way you set the start time (ON).

Blinks

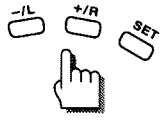
**After setting the minutes (before pressing SET)**




⑤ Select the preset station to be recorded when the timer activates.
Select the radio station.
Press +/R or –/L repeatedly to select the desired preset station, then press SET.








**When CD is selected:**
[1] Press +/R or –/L repeatedly to select desired disc number, then press SET.
[2] Press +/R or –/L repeatedly to select desired track number, then press SET.
- You can select any track number from 1 to 20.
- Pressing SET without selecting the disc and track numbers starts playback from the first track of the last disc selected before timer operation.

⑥ Set the volume.
Press +/R or –/L repeatedly to set the volume, then press SET.
- The volume can be set between 0 and 50.

Blinks

**After setting the volume (before pressing SET)**

After SET is pressed, the display shows the start time, the end time, the source, and the volume settings.

- If the power is ON, press POWER to enter the STANDBY mode once your settings are complete.

### Timer operation

Once set, the DAILY timer operates every day, at the same time, unless the DAILY timer is canceled.
When the end time (OFF) arrives, the unit automatically switches to the STANDBY mode.

### Switching the DAILY timer OFF and ON

The DAILY timer settings are stored in memory.
To turn off the timer without changing the settings, switch the timer operation OFF. The next time you want to use the timer, switch it back ON (the previous settings are still available).

**Switching OFF**
Press CLOCK/TIMER, so that "DAILY" blinks in the display (as described in step ① of the main operations), then press CANCEL. The DAILY indicator turns off and "OFF" appears in the display.

**Switching ON**
Press CLOCK/TIMER, so that "DAILY" blinks in the display (as described in step ① of the main operations), then press SET. The DAILY indicator lights up and the start time, the end time, the source, and the volume settings appear in the display.

## Sleep Timer

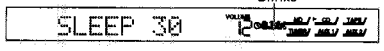
Use the remote control to set this timer.

① Start playing a source.

② Press SLEEP repeatedly to set the timer.
Each time you press SLEEP the timer changes as follows.

→ 10 → 20 → 30 → 60 → 90 → 120 →
Off (Cancelled)

Blinks




Setting is complete when the SLEEP indicator stops blinking and lights steadily.

When the specified period of time has elapsed, the power automatically switches to the STANDBY mode.

**To change the timer length**

After setting the timer, press SLEEP once to displays the time remaining.
To change the timer, press SLEEP again to select the length you desire.

**To cancel the SLEEP timer:**

After setting the timer, press SLEEP repeatedly until the timer length disappears. The SLEEP indicator turns off and the timer is cancelled.

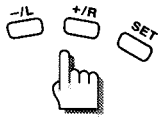
## Timer Priority

When more than one timer is set for a certain time, this unit operates as shown below.

**When more than one timer is set to operate at a given time.**

| | Setting | Actual operation |
|---|---|---|
| | | REC timer is given priority.<br>• There is no sound for a few seconds immediately before the REC timer turns on. |
| Case 1 | REC timer: ON Ⓐ OFF<br>SLEEP timer: Ⓑ OFF<br>AM 1:00 AM 1:30 AM 2:00 | ON Ⓐ OFF<br>Ⓑ<br>AM 1:00 AM 1:30 |
| Case 2 | REC timer: ON Ⓐ OFF<br>DAILY timer: ON Ⓑ OFF<br>AM 6:00 AM 6:30 AM 7:00 AM 7:30 | ON Ⓐ OFF<br>ON Ⓑ<br>AM 6:00 AM 6:30 AM 7:30 |






⑥ Select the recording component (MD or TAPE).
Press +/R or –/L so that the desired component is blinking, then press SET.

- The blinking component is selected.

After SET is pressed, the display shows the start time, the end time, the source, and the volume settings.

- If you plan to record while you are away, set the volume to 0 before switching the power to the STANDBY mode.

**Timer operation**

When the start time comes, the power turns on and recording begins.
When the end time comes, the power automatically switches to the STANDBY mode.

**Switching the REC timer ON and OFF**

The REC timer operates only once, but the settings are stored in memory.
To use the same REC timer again, switch the REC timer ON (the previous settings are still available).
To cancel the REC timer before the start time arrives, switch the REC timer OFF.

**Switching ON**

Press CLOCK/TIMER, so that "REC" blinks in the display (as described in step ① of the main operations), then press SET. The REC indicator lights up and the start time, the end time, the source, and the volume settings appear in the display.

**Switching OFF**

Press CLOCK/TIMER, so that "REC" blinks in the display (as described in step ① of the main operations), then press CANCEL. The REC indicator turns off and "OFF" appears in the display.

## Shortcut Playback (From the RX-EX90 Amplifier/tuner)

By simply pressing INPUT of the amplifier/tuner (RX-EX90) to select an input source, the selected source component can automatically be turned on and its playback started.

### Playing CDs

Press INPUT to select "CD".

CD

The CD player is turned on and playback of the CD with the disc number displayed on the CD player starts.
If no CD has been loaded in the CD player, its display shows "NO DISC".

- When another input source is selected by pressing INPUT, the CD player stops automatically in a few seconds.

### Playing an MD

Press INPUT to select "MD".

MD

The MD recorder is turned on, and if an MD has been loaded in it, playback of the MD starts.
If no MD has been loaded in the MD recorder, its display shows "NO DISC".

- When another input source is selected by pressing INPUT, the MD recorder stops automatically in a few seconds.

### Playing a cassette tape

Press INPUT to select "TAPE".

TAPE

The cassette deck is turned on, and if a tape has been loaded in it, playback of the tape starts.

- When another input source is selected by pressing INPUT, the cassette deck stops automatically in a few seconds.





# COMPU LINK

## Linked Operation of the Other Optional Components (Compu Link)

The EX series components can be controlled under linked operation provided by the JVC's Compu Link remote control system.

### What is Compu Link

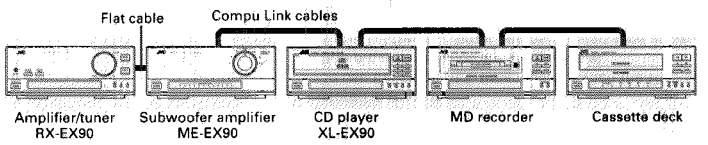
The world of single components, in which you purchase a cassette deck, CD player, amplifier and other components separately and enjoy your own composition, is an effective means for pursuit of high-quality reproduction. However, in terms of operability, the need of controlling components independently makes their control complicated and their linked operation impossible. Then, isn't it possible to combine single components and control them as simply as an integrated audio system? The Compu Link remote control system is the response to such a requirement.
The components in the JVC EX series are equipped with jacks named COMPU LINK-3 (COMPU LINK jacks). By connecting the COMPU LINK jacks of these components, they can be controlled simply with a systematized, linked operation.

### Compu Link connections

Using Compu Link cables, connect the COMPU LINK jacks of EX series components. Connect so that the Compu Link cables can bridge all of the EX series components you have as shown below. The components can be connected in any order.

### Compu Link-3 features

The Compu Link-3 system of the EX series components makes the following operations possible.




#### Shortcut playback

Simply selecting an input source of the amplifier/tuner starts playback of the selected source component (CD player, MD recorder or cassette deck).
Also, even if you do not touch the amplifier/tuner, starting playback of a source component sets the amplifier's input source automatically to the played component.
(See "Shortcut Playback" on page 42.)

#### A single remote control unit

The remote control unit provided with the units can also be used to control other EX series components.
(See "Remote Control of the other Optional Components" on page 44.)

#### Synchronized recording

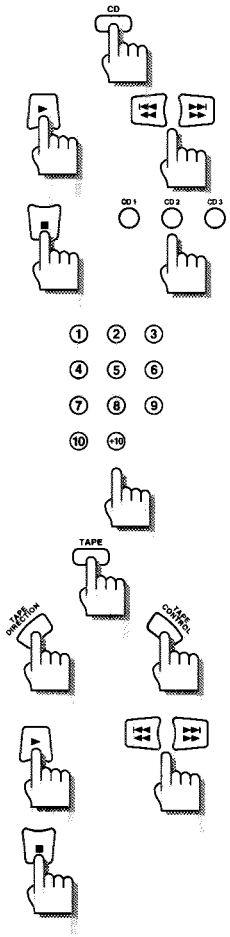
Recording can be started automatically in synchronism with the start of playback of a source component.
(See "Synchronized Recording" on page 46.)

#### Timer operation

The timer function built into the amplifier/tuner can be used to start recording or playback of other components at the reserved time of the day or switch the power to the STANDBY mode in the reserved time period.

## Remote Control of the Other Optional Components

The remote control provided with the units can be used to control the optional components such as the CD player and cassette deck .
Operate the remote control by pointing it to the remote sensor of the amplifier/tuner.




### Controlling the CD player

Use the following buttons to remote control the CD player.

CD: Selects the CD player as the sound source and make it start playback of a loaded CD.
►: Starts playback.
⏮ ◄◄, ►►⏭ ►►: Skips to the beginning of a track.
■: Stops playback.
CD 1: Starts playback of the CD with disc No. 1.
CD 2: Starts playback of the CD with disc No. 2.
CD 3: Starts playback of the CD with disc No. 3.

**Shortcut playback**
Pressing CD or one of CD1 to 3 starts playback immediately.

Number buttons
1 to 10, +10: Used to specify a track number directly after pressing CD, CD1, CD2, CD3 or PLAY MODE.
To select track No. 5: Press 5.
To select track No. 15: Press +10 then 5.
To select track No. 20: Press +10 then 10.
To select track No. 32: Press +10 three times then press 2.

### Controlling the cassette deck

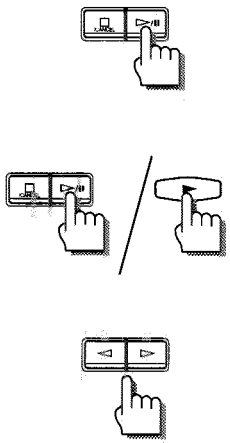
Use the following button to remote control the cassette deck.
TAPE: Selects the cassette deck as the sound source and make it start playback of the inserted tape.
TAPE CONTROL: Switches the remote control mode to the tape mode without selecting the cassette deck as the sound source.
TAPE DIRECTION: Swiches the tape running direction.
►: Starts playback or recording.
⏮ ◄◄, ►►⏭ ►►: Press during playback to skip to the beginning of a piece of music.
Press during stop to fast forward or rewind tape.
■: Stops playback or recording.
REC PAUSE: Initiates record-pause mode.

**Shortcut playback**
Pressing TAPE ( or TAPE CONTROL then ► )starts playback immediately.



## Shortcut Playback (From a Source Component)

By starting playback of a source component , the amplifier/tuner's input source is automatically switched to that source and playback can be monitored through it.
If playback is started while the amplifier/tuner's power is in the STANDBY mode, it is also switched ON automatically.



### CD player operation

Press ▻/II or CD 1, CD 2, or CD 3.
The amplifier/tuner's input source is set to "CD" and CD playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.

### MD recorder operation

Press ▻/II of the MD recorder or ► of the remote control unit provided with the MD recorder.
The amplifier/tuner's input source is set to "MD" and MD playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.

### Tape deck operation

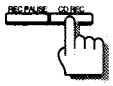
Press ◅ or ▻.
The amplifier/tuner's input source is set to "TAPE" and tape playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.

- It takes about 5 seconds after the amplifier/tuner is turned ON until it can start audio reproduction. In this period, the audio cannot be reproduced even when the source component has started playback. As a result, the beginning of playback may not be heard in this case.
- When another source component is played, the source component which has been played stops automatically in a few seconds.

## Synchronized Recording

When recording CD audio onto an MD, CD audio onto a cassette tape or MD audio on a cassette tape, the recording operation can be synchronized with the playback operation.

### Recording CD audio onto an MD (1: Recording the digital input from the CD player)

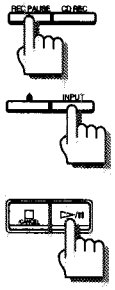


① Prepare the MD recorder.
Load a recordable MD (Mini Disc) in the MD recorder.

② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks if required.

③ Press CD REC of the MD recorder.
Synchronized recording starts.
- To stop the recordind, press □/CANCEL either or the MD recoder or on the CD player.
- Refer also to the instruction manual of the MD recorder.

### Recording CD audio onto an MD (2: Recording the analog input from the CD player)



① Prepare the MD recorder.
Load a recordable MD (Mini Disc) in the MD recorder.

② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks if required.

③ Press REC PAUSE of the MD recorder.
The MD recorder enters record-pause mode.

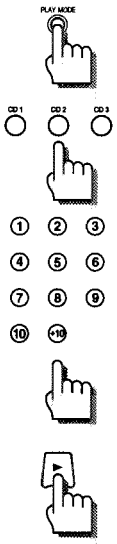
④ Press INPUT of the MD recorder to select the analog input.

⑤ Press ▷/II of the CD player.
Synchronized recording starts.
- To stop the recordind, press □/CANCEL either or the MD recoder or on the CD player.
- Refer also to the instruction manual of the MD recorder.





### Program playback of CD



① While the CD player is in stop mode, press PLAY MODE of the CD player to "PROGRAM".

② Specify the disc number.
Press one of CD1, CD 2 and CD 3.

③ Specify a track number using the number buttons.
Specify while the display is blinking (for 4 sec.).

④ Program required tracks by repeating steps ② and ③ for each.

⑤ Press ►.
Program playback starts.

### Recording of cassette deck

①. Load the tape for use in recording in the tape tray.

② Press TAPE DIRECTION to select the tape running direction.

③ Press REC PAUSE.
The cassette deck enters the record-pause mode.

④ Play the source to be recorded.

⑤ Press ►.
Recording starts.

# Additional Information

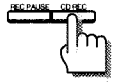
## Troubleshooting

If you experience any difficulty with your units, check the following list for a possible solution before calling for service. If you cannot solve the problem from the hints given here, or the units have been physically damaged, call a qualified person, such as your dealer, for service.

| SYMPTOM | POSSIBLE CAUSE | ACTION |
|---|---|---|
| **Amplifier/tuner**<br>Amplifier/tuner does not respond. | • The AC power cord is disconnected. | • Connect the power. |
| No sound. | • Connections are incorrect or incomplete. | • Refer to "Connections" and make sure all equipment is connected correctly. |
| | • The speaker cords are not connected. | • Connect the speaker cords. |
| | • Headphones are connected. | • Disconnect the headphones. |
| | • The volume control is turned all the way down. | • Turn VOLUME to the right. |
| Sound placement and/or motion is undefined. | • The polarity (+, –) of one speaker is reversed. | • Make sure both speakers are connected with the correct polarity. |
| Sound comes from only one speaker. | • The balance is turned all the way to the right or left.<br>• A speaker cords is disconnected. | • Adjust the balance toward the center.<br>• Make sure the speaker cords are connected securely. |
| Noise in broadcast signal makes it difficult to hear. | • Antenna is not connected.<br>• The AM loop antenna is too close to the unit. | • Make sure the antennas are connected securely.<br>• Change the location and direction of the AM loop antenna. |
| | • The FM wire antenna is laying in a pile on the floor. | • Strech the wire antenna out and pin it in a position that provides good reception. |
| Remote control does not work | • Batteries are exhausted.<br>• Battery polarity (+, –) is reversed.<br>• Incorrect operation. | • Replace the batteries.<br>• Reinsert batteries correctly.<br>• Point remote control at the remote sensor on the amplifier/tuner. |
| | • The remote sensor is in direct sunlight. | • Keep the remote sensor away from direct sunlight. |



### Recording CD audio onto a cassette tape (1)




① Prepare the cassette deck.
Load a tape for use in recording in the cassette deck.

② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks as required.

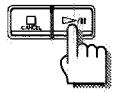
③ Press CD REC of the cassette deck.
Synchronized recording starts.
- To stop recording, press □/CANCEL on the CD player or ■ on the casse the deck.
- Refer also to the instruction manual of the cassette deck.

### Recording CD or MD audio onto a cassette tape (2)

① Prepare the cassette deck.
Load a tape for use in recording in the cassette deck.

② Prepare the CD player or MD recorder.
To record CD: Load the CD to be recorded in the CD player and program tracks as required.
To record MD: Load the MD to be recorded in the MD recorder and program tracks as required.

③ Press REC PAUSE of the cassette deck.
The cassette deck enters the recording standby mode.



④ Press ▷/II of the CD player or MD recorder.
Synchronized recording starts.
- Refer also to read the instruction manuals of the other components.

## Specifications

**Amplifier/tuner (RX-EX90)**

| | |
|---|---|
| **Output Power** | **20 watts per channel, min. RMS, both channels driven, into 6 ohms from 70 Hz to 20 kHz, with no more than 0.9% total harmonic distortion.** |
| Total Harmonic Distortion (6 ohms, 1kHz) | 0.08% at 14 watts output (* Measured by JVC Audio Analysis System) |
| Audio Input Sensitivity/Impedance (1 kHz) | |
| | CD, MD 260 mV/49 kohms |
| | TAPE 290 mV/54 kohms |
| | AUX 370 mV/49 kohms |
| Audio output level/ Impedance (1 kHz) | |
| | TAPE, MD 210 mV/400 ohms |
| | SUB-WOOFER OUT 1.8 V/1 kohm |
| Speaker terminals | |
| Impedance | 6 – 16 ohms |

**Tuner Section**

| | | |
|---|---|---|
| FM Tuner | Tuning Range | 87.5 – 108.0 MHz |
| AM Tuner | Tuning Range | 530 – 1,710 kHz |

**General**

| | |
|---|---|
| Dimensions | 200 × 80 × 323.4 mm (W/H/D) (7-7/8 × 3-3/16 × 12-3/4 inches) |
| Mass | 3.3 kg (7.3 lbs) |

**Power Specifications**

| | |
|---|---|
| Power Requirements | AC 120 V∿, 60 Hz |
| Power Consumption | 48 watts (at operation) |
| | 13 watts (in standby mode) |

**Subwoofer amplifier (ME-EX90)**

| | |
|---|---|
| **Output Power** | **30 watts per channel, min. RMS, both channels driven, into 3 ohms at 70 Hz with no more than 0.9% total harmonic distortion.** |
| Input Sensitivity/Impedance (70 Hz) | |
| SUB-WOOFER IN | 670 mV/47 kohms |
| Speaker terminals | |
| Impedance | 3 – 16 ohms |

**General**

| | |
|---|---|
| Dimensions | 200 x 80 x 323.4 mm (W/H/D) (7-7/8 × 3-3/16 × 12-3/4 inches) |
| Mass | 3.2 kg (7.1 lbs) |

**Power Specifications**

| | |
|---|---|
| Power Requirements | AC 120 V∿, 60 Hz |
| Power Consumption | 54 watts (at operation) |
| | 8.6 watts (in standby mode) |



| SYMPTOM | POSSIBLE CAUSE | ACTION |
|---|---|---|
| **CD player** | | |
| Playback is not possible. | • No disc has been loaded.<br>• The disc was inserted upside-down.<br>• The disc is not flat in the groove on the disc tray<br>• The playback is paused.<br>• The disc is damaged.<br>• Moisture has condensed inside the unit. | • Load a disc (see page 28).<br>• Load the disc so that the label side faces up in the disc tray.<br>• Load the disc so that it lies flat in the disc tray (see page 28).<br>• Press ▷/II.<br>• Load a different disc.<br>• Leave the unit turned on until the moisture evaporates. |
| Sound is intermittent. | • The disc is dirty.<br>• The disc is warped or scratched. | • Wipe the surface disc with a soft cloth.<br>• Replace the disc with a new one. |
| No sound. | • Connections are incorrect or incomplete.<br>• Volume control on amplifier /tuner is turned all the way down. | • Check to make sure the all equipment is connected correctly.<br>• Adjust the volume on the amplifier/tuner. |
| Disc tray does not open. | • Power cord is not connected.<br>• Power is not turned on. | • Connect the power cord.<br>• Turn the power on. |
| CD player does not respond. | • The power cord is disconnected.<br>• The Compu Link cable is not connected.<br>• Power is not turned on. | • Connect the power cord.<br>• Connect the Compu Link cable.<br>• Turn the power on. |

QUALITY JVC SERVICE

## *HOW TO LOCATE YOUR JVC SERVICE CENTER*

***TOLL FREE : 1-800-537-5722***

*Dear customer:*
*In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, Call 1-800-537—5722 for your authorized servicer. Remember to retain you Bill of Sale for Warranty Service.*

*—JVC*

**JVC SERVICE & ENGINEERING COMPANY OF AMERICA**
DIVISION OF US JVC CORP.

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(201) 808-9279

1500 Lakes Parkway
Lawrenceville, GA 30243-5357
(770) 339-2522

705 Enterprise Street
Aurora, IL 60504-8149
(630) 851-7855

5665 Corporate Avenue
Cypress, CA 90630-0024
(714) 229-8011

2969 Mapunapuna Place
Honolulu, HI 96819-2040
(808) 833-5828

10700 Hammerly, Suite 110
Houston, TX77043
(713) 935-9331

230 Eliot Street
Ashland, MA 0172-2377
(508) 881-5923

14505 Commerce Way
Miami Lakes, FL 33016-1512
(305) 362-6252

890 Dubuque Avenue
South San Francisco, CA 94080-1804
(415) 871-2666

*Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level of performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.*

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

***If you ship the product • • •***

*Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.*

**Don't service it yourself.**

**CAUTION**

*To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.*
*Refer servicing to qualified service personnel.*

***ACCESSORIES***

*To purchase accessories for your JVC product, you may contact your local JVC Dealer.*
*Or from the 48 Continental United States call toll free : 800-882-2345*

(0694)



**CD Player (XL-EX90)**

| | |
|---|---|
| CD Capacity | 3 CDs |
| Dynamic Range | 95 dB |
| Signal-To-Noise Ratio | 100 dB |
| Wow And Flutter | Unmeasurable |

**General**

| | |
|---|---|
| Dimensions | 200 × 80 × 310 mm (W/H/D) |
| | (7-3/16 × 3-3/16 × 12-1/4 inches) |
| Mass | 2.8 kg (6.2 lbs) |

**Power Specifications**

| | |
|---|---|
| Power Requirements | AC 120 V∿, 60 Hz |
| Power Consumption | 8 watts (at operation) |
| | 3 watts (in standby mode) |

**Accessories**

AC power cord (1)
Stereo Audio pin cord (1)
Monaural Audio pin cord (1)
Compu Link cable (1)
AM loop antenna (1)
FM wire antenna (1)
Batteries (R6P(SUM-3)/AA (15F)) (2)
Remote Control (1)
Flat cable (1)

*Design and specifications are subject to change without notice.*

JVC

VICTOR COMPANY OF JAPAN, LIMITED

# JVC LIMITED WARRANTY AUDIO-1

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIAL AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period.")

| PARTS | LABOR |
|---|---|
| 1YR | 1YR |

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY(50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800)537-5722.
If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus and letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number.
If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

WHAT IS NOT COVERED:

This limited warranty provided by JVC does not cover:

1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
2. Initial installation and installation and removal for repair;
3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
5. Signal reception problems and failures due to line power surge;
6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus(Needle) are covered for 90 days from the date of purchase;
7. Accessories;
8. Batteries (except the Rechargeable Batteries are covered for 90 days from the date of purchase);

There are no express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MARCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty last, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

JVC COMPANY OF AMERICA
DIVISION OF US JVC CORP.

41 Slater Drive
Elmwood Park, New Jersey 07407

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY. THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:

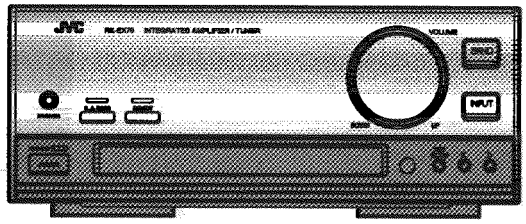
Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.: _____ Serial No.: _____

Purchase date: _____ Name of dealer: _____

# INTEGRATED COMPACT SYSTEM

# RX-EX90
# RX-EX90R



RX-EX70

- Contents -

Removal of Main Parts ---------- 2-2
Description of Main ICs ---------- 2-5
Standard Schematic Diagrams ---------- 2-13
Location of P. C. Board Parts ---------- 2-19

# Removal of Main Parts

**(1) Removing the top cover**

1. Remove the two screws A retaining both sides of the top cover and four screws A retaining the rear sides of the cover.
2. While raising the rear section and slightly spreading the top cover, pull it out from the front panel.

**(2) Removing the front panel assembly**

1. Remove the top cover.
2. From both sides of the bottom of the body, remove the three screws B retaining the front panel assembly.
3. Pull out the card wire (CN701) and flat wire (CN703).
4. By removing the one screw C, disconnect the earth wire.
5. By removing the three hooks, disassemble the front panel assembly.

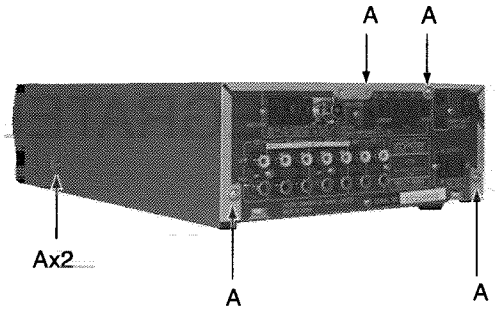



Fig. 1

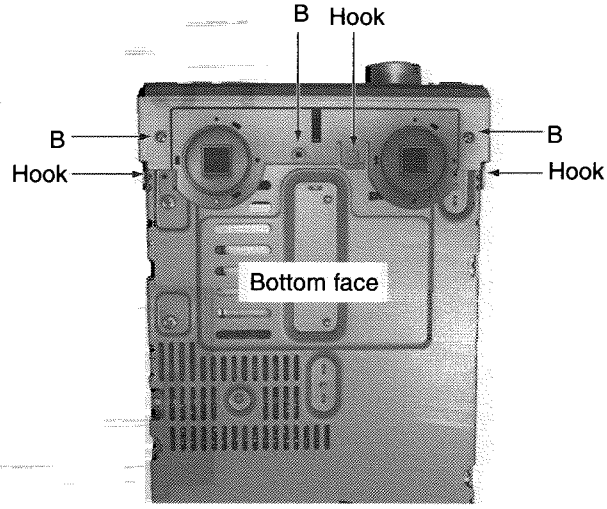



Fig. 2

**(3) Removing the rear panel**

1. Remove the top cover.
2. Pull out the cord bushing with cutting pliers, etc.

CAUTION: In this case, the cord bushing should be pulled out so carefully as not to cause any damage to the cord by protecting it with a sheet, etc.

3. Remove the eleven screws D retaining the rear panel.

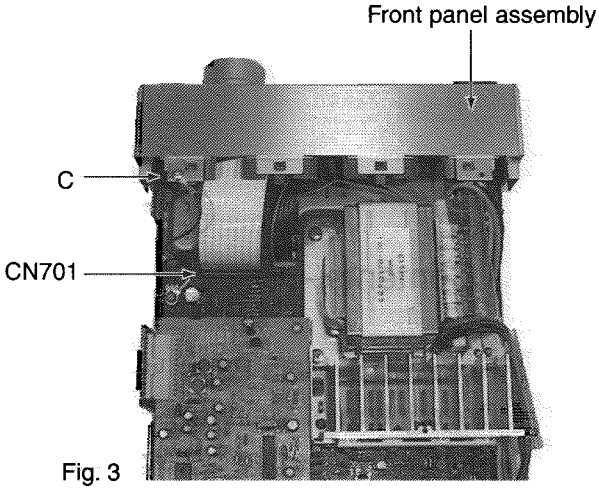



Fig. 3

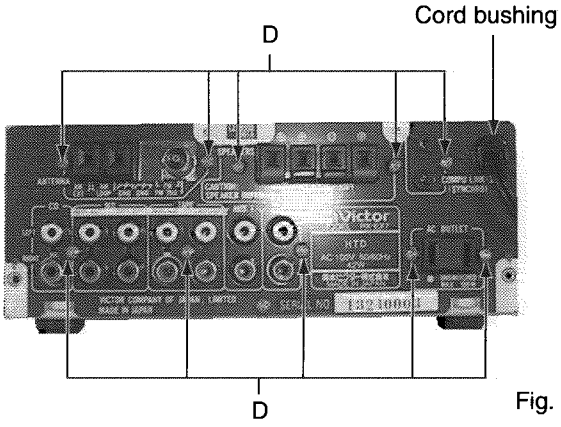



Fig. 4

**(4) Removing the front cover and system control P.C. board**

1. Remove the top cover and front panel.
2. Remove the main volume and the main volume nut.
3. By removing the four screws B retaining the system control P.C. board.
4. After removing the four hooks A, remove the two hooks B. For assembly, on the other hand, set the hooks A after setting the hooks B.

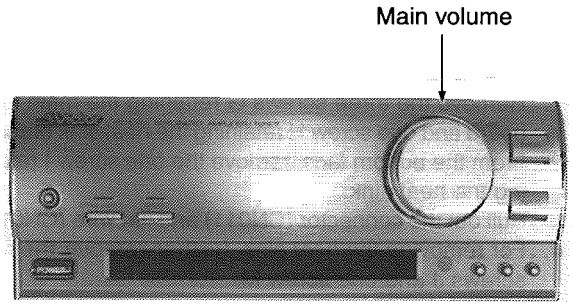



Fig. 5

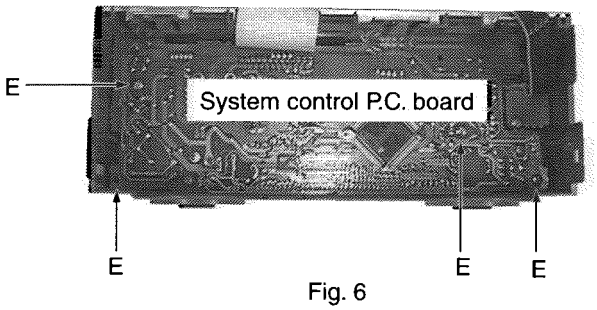



Fig. 6

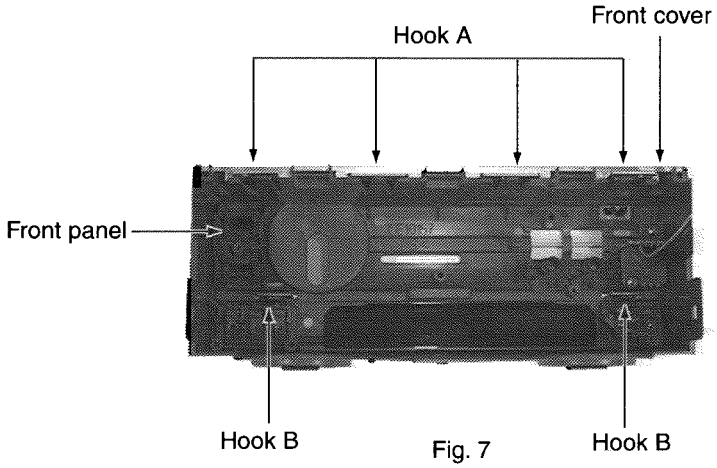



Fig. 7

**(5) Removing the tuner P.C. board**

1. Remove the rear panel.
2. Remove the one screw F retaining the tuner P.C. board.
3. While raising the hook of the connector (CN111), re - move the tuner P.C. board.

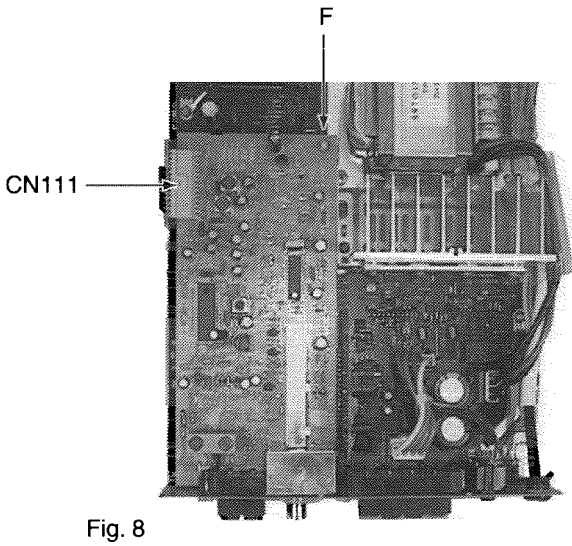



Fig. 8

**(6) Removing the P.C. board**

1. Remove the three screws G retaining the main P.C. board and one screw H retaining the heat sink bracket.
2. From the bottom face, remove the one screw I retaining the heat sink.
3. Pull out the connector (CN011) and flat wire (CN012).
4. For removing the heat sink, further remove the four screws J and one screw M.

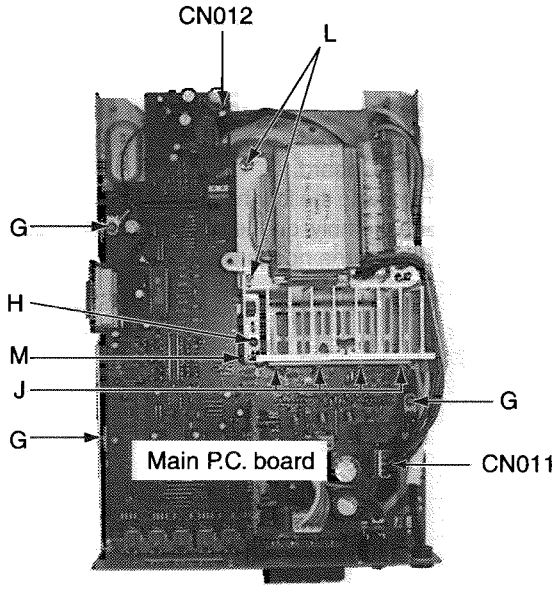



Fig. 9

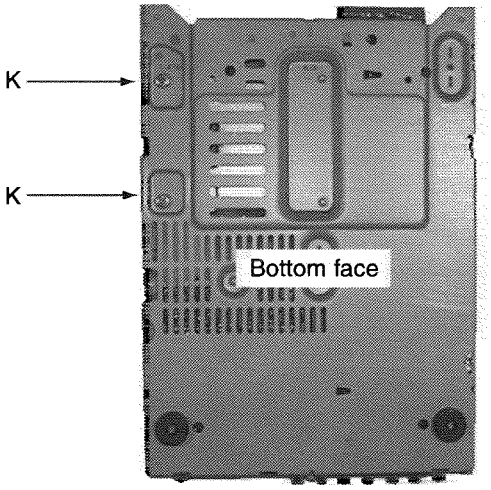
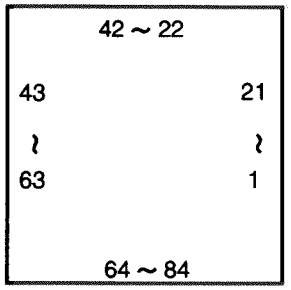



Fig. 10

# Description of Main ICs

## ■ MN173222JABG(IC501): AMP/TUNER/DISPLAY controler

### 1. External View




### 2. Key Matrix

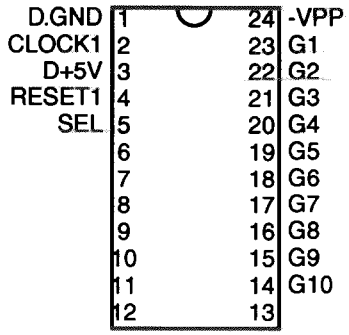
| | KEY IN 0 | KEY IN 1 | KEY IN 2 | KEY IN 3 |
|---|---|---|---|---|
| KEY OUT 0 | POWER | DIRECT | BASS | BAND |
| KEY OUT 1 | INPUT | KEY MODE | ≪ | ≫ |

### 3. Terminal Description

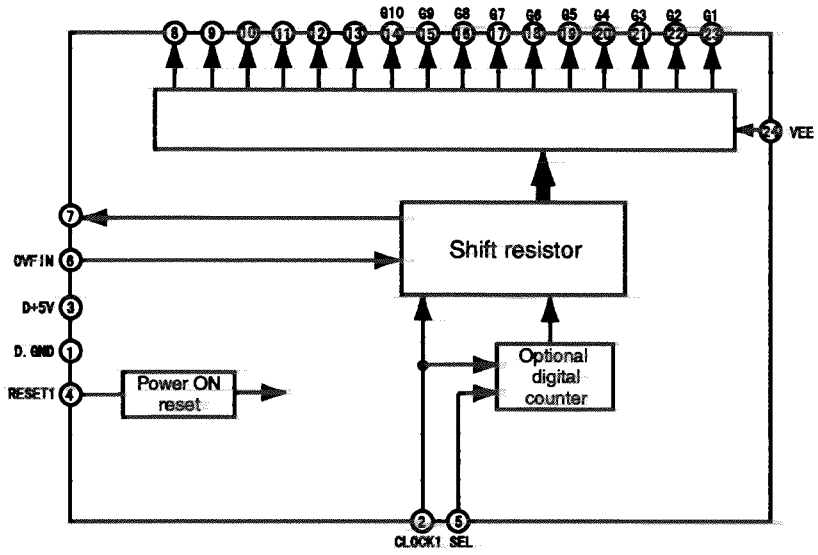
| PIN No. | Symbo | I/O | Description of function | PIN No. | Symbo | I/O | Description of function |
|---|---|---|---|---|---|---|---|
| 1~22 | S1~S22 | O | FL segment control output | 60 | TMUTE | I/O | AM/FM IF buffer input and mute input |
| 23 | -VPP | - | Power supply terminal | 61 | TDATA | O | Data output terminal to IC121 |
| 24~36 | S23~S35 | O | FL segment control output | 62 | TCLK | O | Clock signal output terminal to IC121 |
| 37 | | - | Not used | 63 | TCE | O | Chip enable signal to IC121; |
| 38 | | - | Not used | | | | ON at "H" |
| 39 | | - | Not used | 64 | IFDATA | I | Data signal input terminal from IC121 |
| 40 | STB | O | Strobe signal output to IC701 | 65 | DCSO | O | DSC signal output terminal |
| 41 | CLOCK | O | Clock signal output to IC701 | 66 | DCSI | I | DSC signal input terminal |
| 42 | SDA | O | Serial data output to IC708 | 67 | BASSI | O | DSC signal output terminal |
| 43 | DATA | O | Data output to IC701 | 68 | /RESET | I | System reset signal input |
| 44 | SCL | O | Serial clock output to IC708 | 69 | X1 | - | Connected to GND |
| 45 | | - | Not used | 70 | X2 | - | Not used |
| 46 | | - | Not used | 71 | VSS | - | Connected to GND |
| 47 | /P.ON | O | Standby indicator control "H": | 72 | OSC2 | - | Oscillator terminal (6MHz) |
| | | | ON; "L": OFF | 73 | OSC1 | - | Oscillator terminal (6MHz) |
| 48 | | - | Not used | 74 | VDD | - | Power supply terminal |
| 49 | /REM | I | Remote control signal input | 75 | JOG1 | I | Jog pulse input 1 |
| 50 | TKEYI0 | I | Key matrix input | 76 | JOG2 | I | Jog pulse input 2 |
| 51 | TKEYI3 | I | Key matrix input | 77 | /INH | I | Direct inhibit signal input |
| 52 | TKEYI2 | I | Key matrix input | 78 | DIRECT | O | To indicator control |
| 53 | TKEYI1 | I | Key matrix input | 79 | | - | Not used |
| 54 | PRT | I | Protector signal input | 80 | SEL | O | Select signal output to IC502 |
| 55 | SPK | O | Speaker ON/OFF control | 81 | RESET1 | O | IReset signal output to IC502 |
| 56 | S.MUTE | O | Source mute signal output | 82 | CLOCK1 | O | Clock signal output to IC502 |
| 57 | HPSW | I | Headphone signal switch input | 83 | TKEYO0 | O | Key matrix output |
| 58 | /STEREO | I | Stereo indicator drive input | 84 | TKEYO1 | O | Key matrix output |
| 59 | /TUNED | I | Indicator drive input during tuning | | | | |

## ■ M35501FP(IC502):FL controler

### 1. External View




### 2. Block Diagram




### 3. Terminal Description

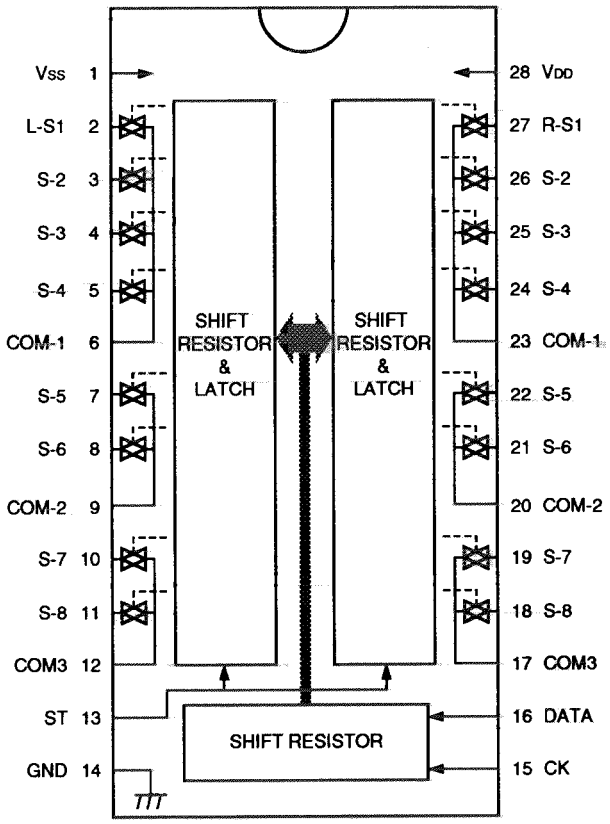
| PIN No. | Symbol | I/O | Description of function |
|---|---|---|---|
| 1 | D.GND | - | Connected to GND |
| 2 | CLOCK1 | I | Clock signal input terminal to IC501 |
| 3 | D+5V | - | Power supply terminal |
| 4 | RESET1 | I | Reset signal input terminal from IC501 |
| 5 | SEL | I | Select signal input terminal from IC501 |
| 6 | OVFIN | I | Overflow signal input terminal |
| 7~13 | | - | Not used |
| 14~23 | G10~G1 | O | FL grit control output |
| 24 | -VPP | - | Power supply terminal |

■ TC9164AN(IC701) : Electronic Volume

1.Function

This volume is designed to switching on and off the switches S1 - S8 according to control from the microcomputer.

2. Terminal Arrangement and Block Diagram




3.Relation between the Respective Switches and Data

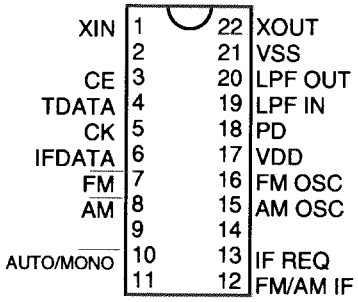
The switches S1 - S8 will switch on the position corresponding to "1" depending on bits 1 - 8 of the serial data.

The switches S9 and S10 will turn on the right and left sides, respectively. The TC9162, TC9163 and TC9164 will be identified and selected according to bits 11 - 14.

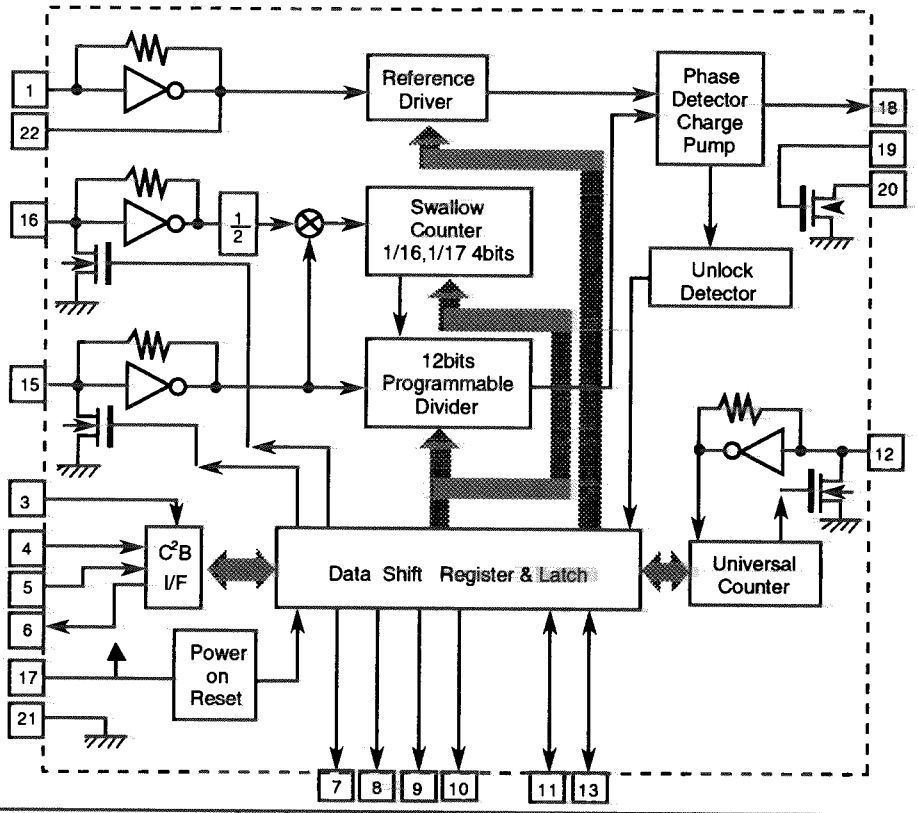
| | Switch select bit | | | | | | | | Right | Left | Switch select bit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S1 | S2 | S3 | S4 | S5 | S6 | S7 | S8 | S9 | S10 | S11 | S12 | S13 | S14 |
| TC9162N | With the switches S-1 - S8, the position corresponding to "1" will be switched on according to bits 1 - 8 of the serial data. | | | | | | | | | | 0 | 0 | 0 | 0 |
| TC9163N | With the switches S-1 - S8, the positio corresponding to "1" will be switched on according to bits 1 - 8 of the data. | | | | | | | | | | 1 | 0 | 0 | 0 |
| TC9164N | With the switches S-1 - S8, the position corresponding to "1" will be switched on according to bits 1 - 8 of the serial data. | | | | | | | | | | 0 | 1 | 0 | 0 |

## ■ LC72131(IC121):PLL frequency synthesizer for electronic tuning

### 1. External View




### 2. Block Diagram

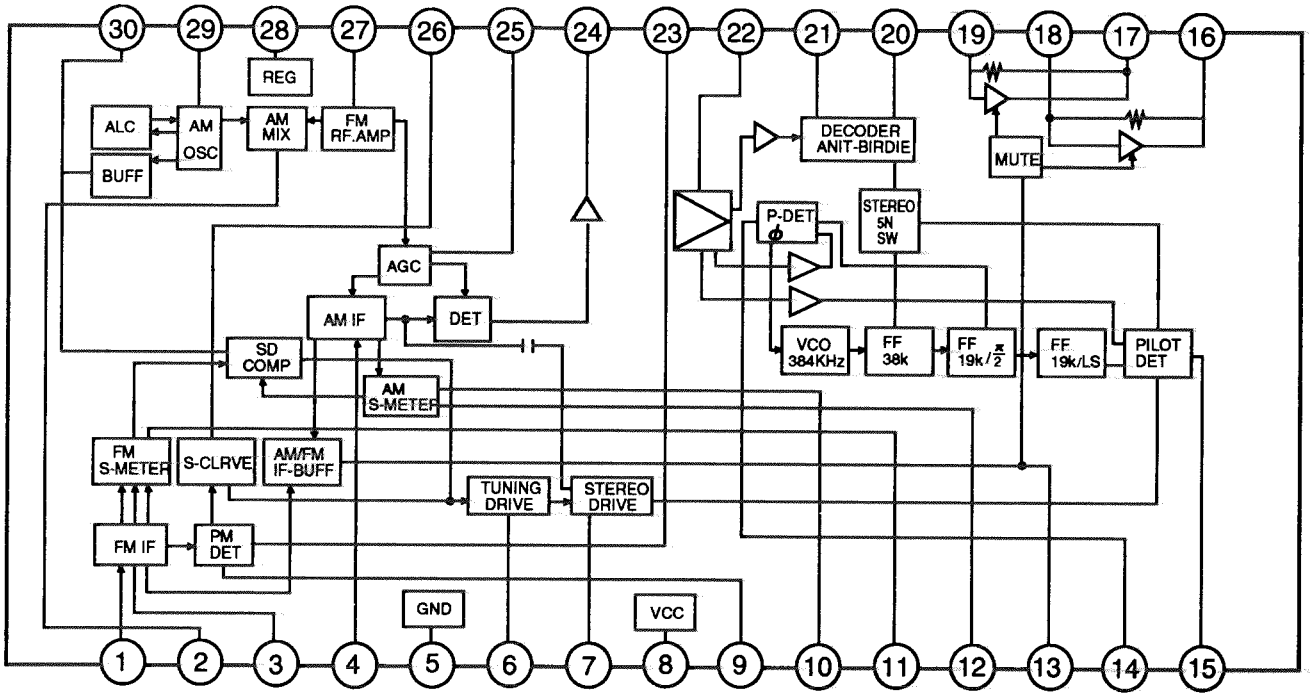



### 3. Pin Functions

| Pin No. | Symbol | I/O | Description of function | Pin No. | Symbol | I/O | Description of function |
|---|---|---|---|---|---|---|---|
| 1 | Xin | I | Crystal oscillator connector terminal (7.2MHz) | 12 | FM/AM IF | I | Universal counter signal input |
| 2 | | -- | Not used | 13 | IF REQ | O | IF signal request is output. |
| 3 | CE | I | "H" when inputting or outputting the data to the #4 pin (inputting) or #6 pin (outputting). | 14 | | I | Not used |
| 4 | PLLDA | I | Input terminal for receiving control data from controller | 15 | AMOSC | | AM station section oscillator signal input |
| 5 | PLLCK | I | Synchronizing signal input terminal used for exchanging data between controller | 16 | FM OSC | I | FM station section oscillator signal input |
| 6 | IFDATA | O | Output terminal for sending data to controller | 17 | VDD | O | Power supply terminal |
| 7 | $\overline{FM}$ | O | FM mode at "LOW" | 18 | PD | O | Charge pump output of PLL. "HIGH" or "LOW" when the station section oscillator frequency is higher or lower than the reference frequency, and floating when the station section oscillator frequency is equal to the reference frequency. |
| 8 | $\overline{MW}$ | O | FM mode at "LOW" | 19 | LPF IN | I | Input for active low pass filter of PLL |
| 9 | — | O | Not used | 20 | LPF OUT | O | Output for active low pass filter of PLL |
| 10 | AUTO $\overline{MONO}$ | O | MONO control output to IC102 | 21 | VSS | -- | Connected to GND |
| 11 | | O | Not used | 22 | X out | O | Crystal oscillator connector terminal (7.2MHz) |

## ■ LA1837(IC102): FM AM IF AMP & detector and FM MPX detector

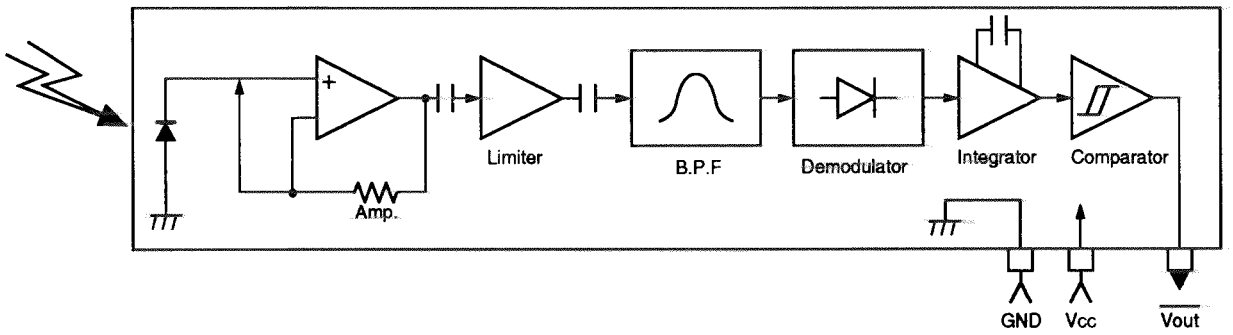
1. Block Diagram



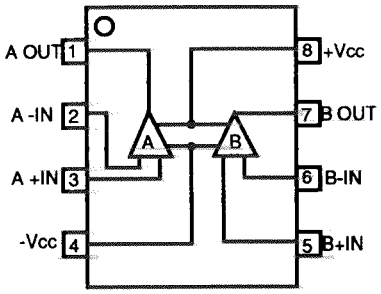

2. Terminal Description

| Pin No. | Symbol | I/O | Description of function | Pin No. | Symbol | I/O | Description of function |
|---|---|---|---|---|---|---|---|
| 1 | FM IN | I | FM signal input | 16 | L OUT | O | Left side output |
| 2 | AM MIX | O | AM mixer output | 17 | R OUT | O | Right side output |
| 3 | FM IF | I | FM IF bypass | 18 | L IN | I | Left side post amp. input |
| 4 | AM IF | I | AM IF signal input | 19 | R IN | I | Right side post amp. input |
| 5 | GND | – | Ground terminal | 20 | RO | O | Right side multiplex output |
| 6 | TUNED | O | Indicator drive output for tuning | 21 | LO | O | Left side multiplex output |
| 7 | STEREO | O | Stereo indicator drive output "H": Monaural; "L": Stereo | 22 | IF IN | I | Multiplex signal input |
| 8 | VCC | – | Power supply terminal | 23 | FM OUT | O | FM tuning/tuner output |
| 9 | FM DET | – | FM detector coil connector terminal | 24 | AM DET | O | AM detector output |
| 10 | AM SD | – | AM ceramic filter terminal | 25 | AM AGC | I | AM AGC voltage input |
| 11 | FM VSM | O | For determining FM tuning sensitivity | 26 | AFC | – | Voltage output for FM-AFC (automatic frequency ontrol) |
| 12 | AM VSM | O | For determining AM tuning sensitivity | 27 | AM RF | I | AM RF signal input |
| 13 | MUTE | I/O | AM/FM IF buffer output and mute input | 28 | REG | O | For controlling the band width of FM |
| 14 | FM/AM | I | Selection of AM/FM; "H": AM; "L": FM | 29 | AM OSC | – | AM station section oscillator |
| 15 | MONO/ST | O | Monaural and stereo selection; "H": Stereo; "L": Monaural | 30 | OSC BUFFER | O | AM station section oscillator |

■ GP1U271X(IC520) : Remote control signal receiving IC




■ NJM5532D(IC702.IC301):Dual Op. Amp.



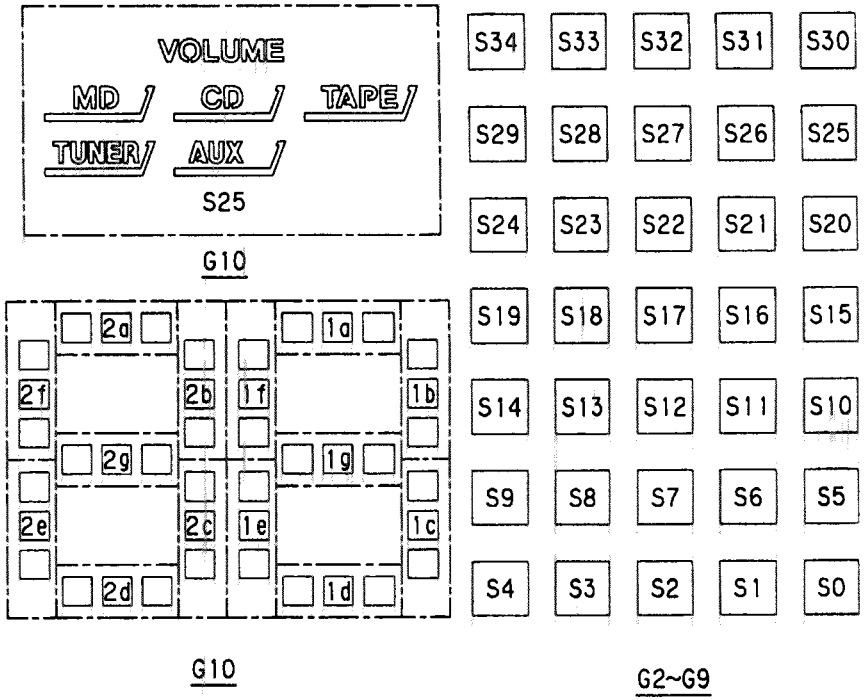
## Description of FL indicator tube internals

■ QLF0029-001

1. Splitting and internal connection of grid/segment

| | G1 | G2~G9 | G10 |
|---|---|---|---|
| S0 | | S0 | AUX2 |
| S1 | | S1 | (AUX) 1 |
| S2 | | S2 | (AUX2) |
| S3 | | S3 | (AUX1) |
| S4 | | S4 | (TUNER) |
| S5 | | S5 | INFO |
| S6 | | S6 | NEWS |
| S7 | | S7 | TA |
| S8 | | S8 | 1d |
| S9 | | S9 | 1c |
| S10 | | S10 | 1e |
| S11 | | S11 | 1g |
| S12 | | S12 | 1b |
| S13 | | S13 | 1f |
| S14 | | S14 | 1a |
| S15 | | S15 | EON |
| S16 | | S16 | 2d |
| S17 | | S17 | 2c |

| | G1 | G2~G9 | G10 |
|---|---|---|---|
| S18 | | S18 | 2e |
| S19 | | S19 | 2g |
| S20 | | S20 | 2b |
| 21 | | 21 | 2f |
| S22 | | S22 | 2a |
| S23 | | S23 | RDS |
| S24 | | S24 | PRESET |
| S25 | | S25 | S25 |
| S26 | | S26 | (REC) |
| S27 | | S27 | (SLEEP) |
| S28 | | S28 | (DAILY) |
| S29 | | S29 | REC |
| S30 | | S30 | SLEEP |
| S31 | AM | S31 | DAILY |
| S32 | STEREO | S32 | (TAPE) |
| S33 | FM | S33 | (CD) |
| S34 | TUNED | S34 | (MD) |




2. Terminal Connection

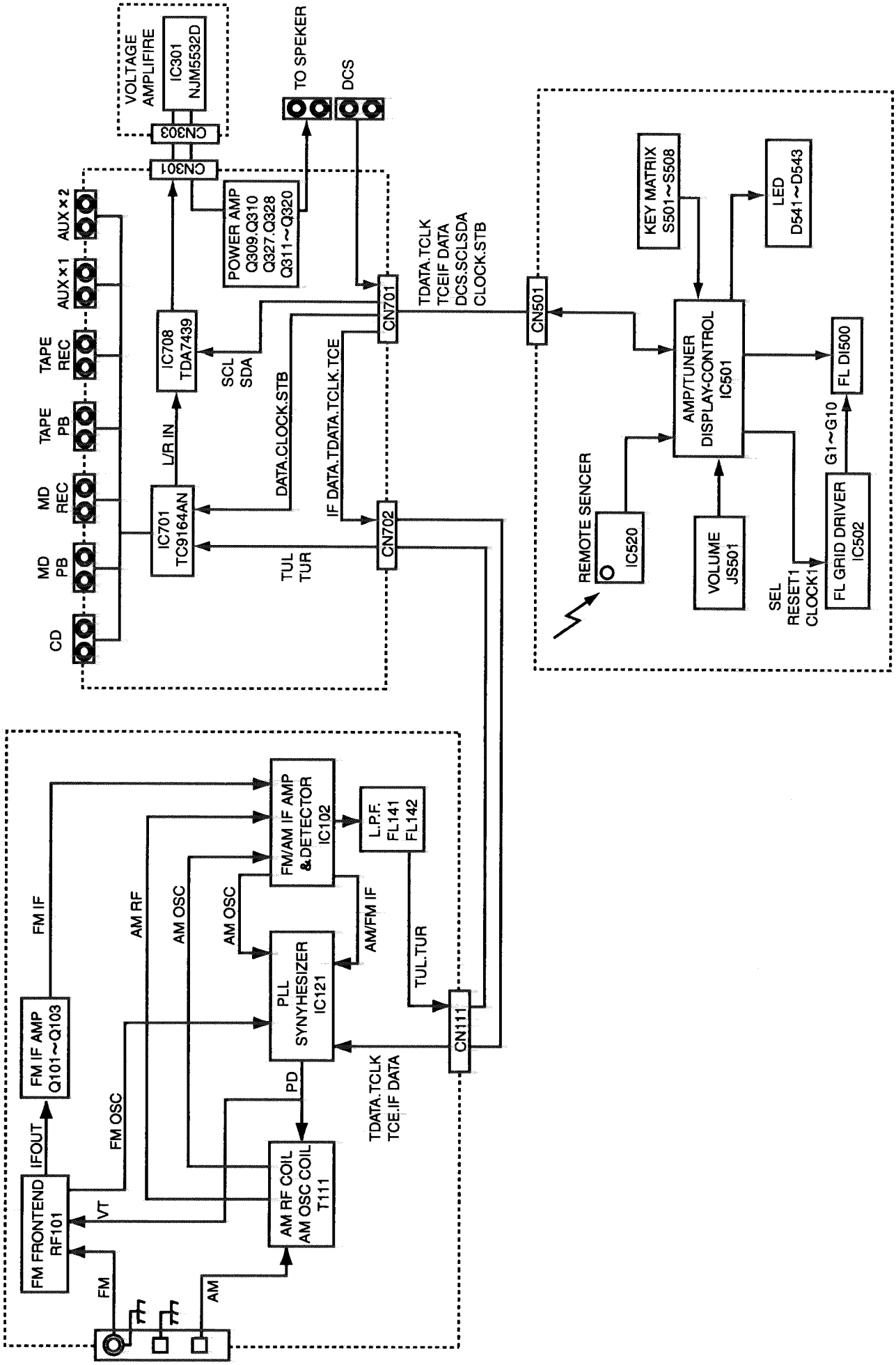
| Pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | F1 | F1 | NL | D | S34 | S33 | S32 | S31 | S30 | S29 | S28 | S27 | S26 | S25 | S24 | S23 | S22 | S21 | S20 | S19 | S18 | S17 | S16 | S15 | S14 | S13 | S12 |

| Pin No. | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | S11 | S10 | S9 | S8 | S7 | S6 | S5 | S4 | S3 | S2 | S1 | S0 | NL | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | G9 | G10 | H | NL | F2 | F2 |

F1,F2:Filament G1~G10:Grid S0~S34:Anode D: Connect externally to F1 NL:No Lead

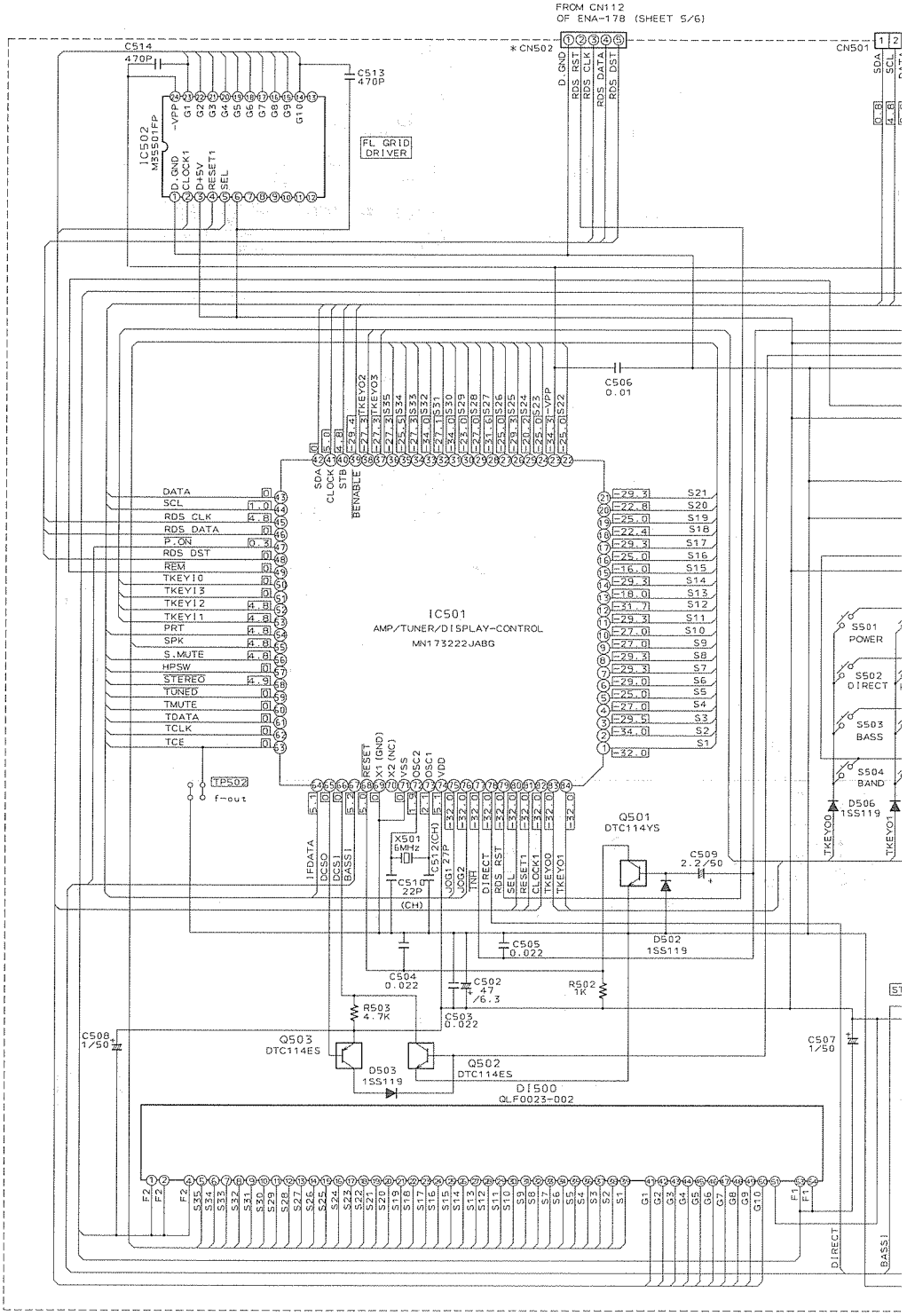
H: Normal current passing grid

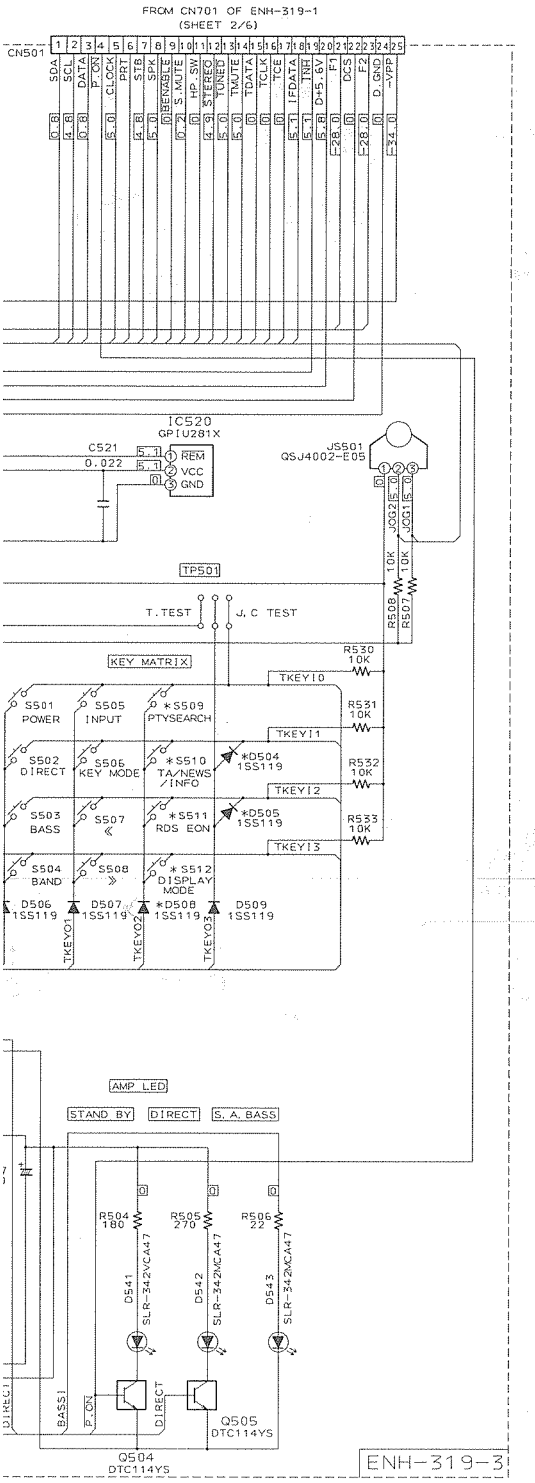
## ■ Block Diagram



# Standard Schematic Diagrams

## [RX-EX90] System Control



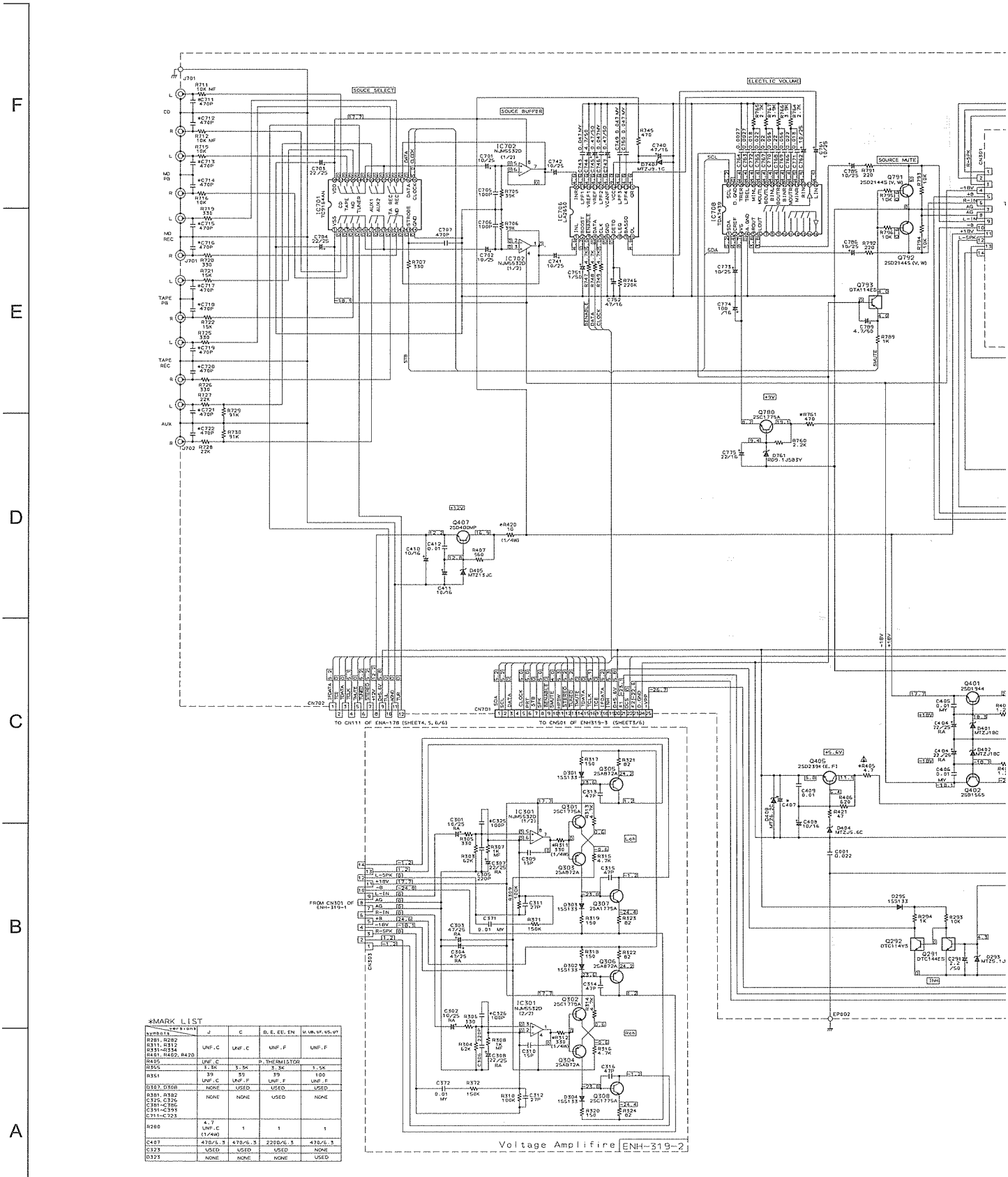



* MARK LIST

| | J, C | B, E, EE, EN | U, UT, UF US, UB |
|---|---|---|---|
| D504 | NONE | USED | USED |
| D505 | NONE | NONE | USED |
| D508 | NONE | USED | NONE |
| S509-S12 | NONE | USED | NONE |
| CN502 | NONE | USED | NONE |

6 7 8 9 10

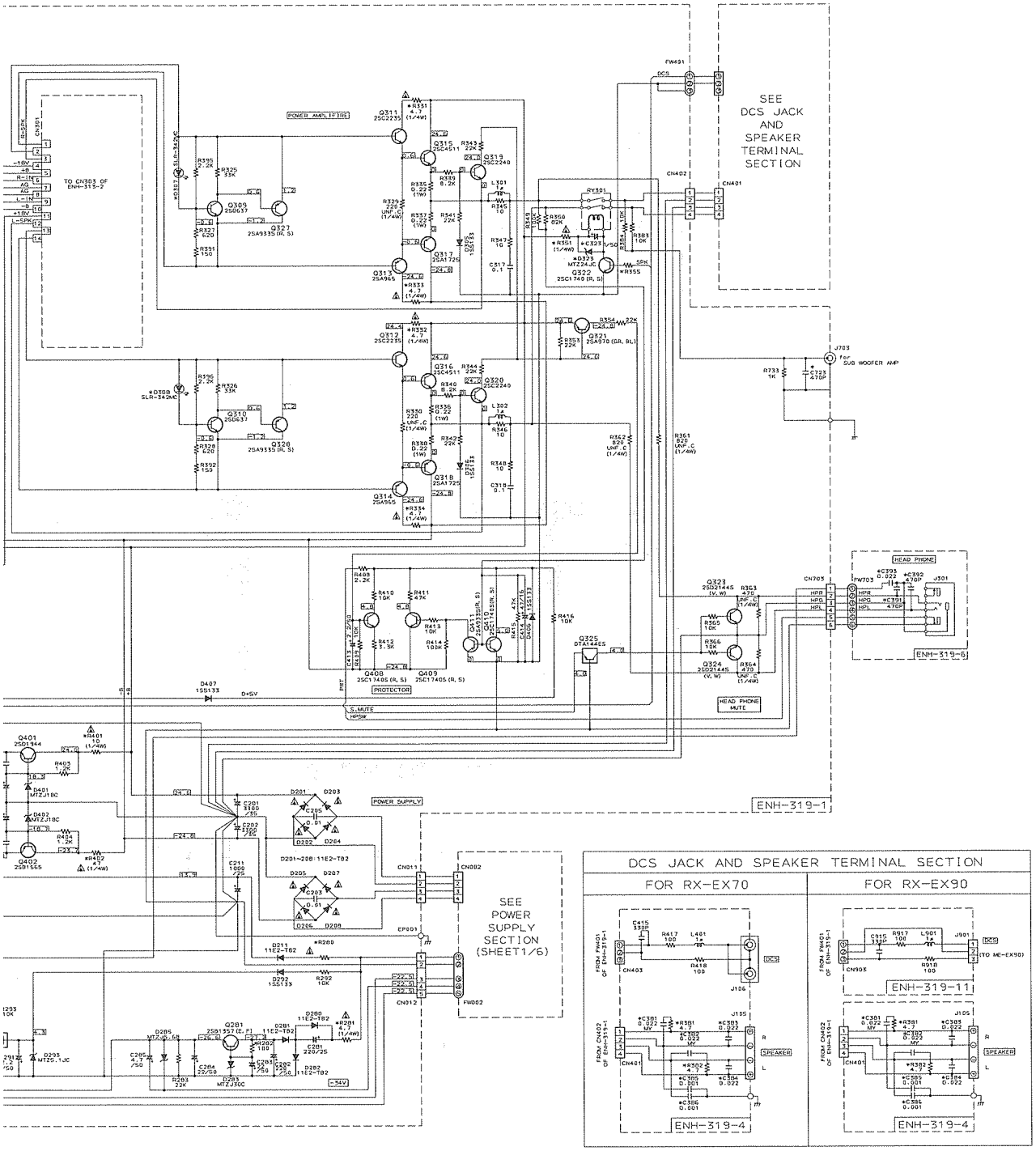
## [RX-EX90] Main Amplifier



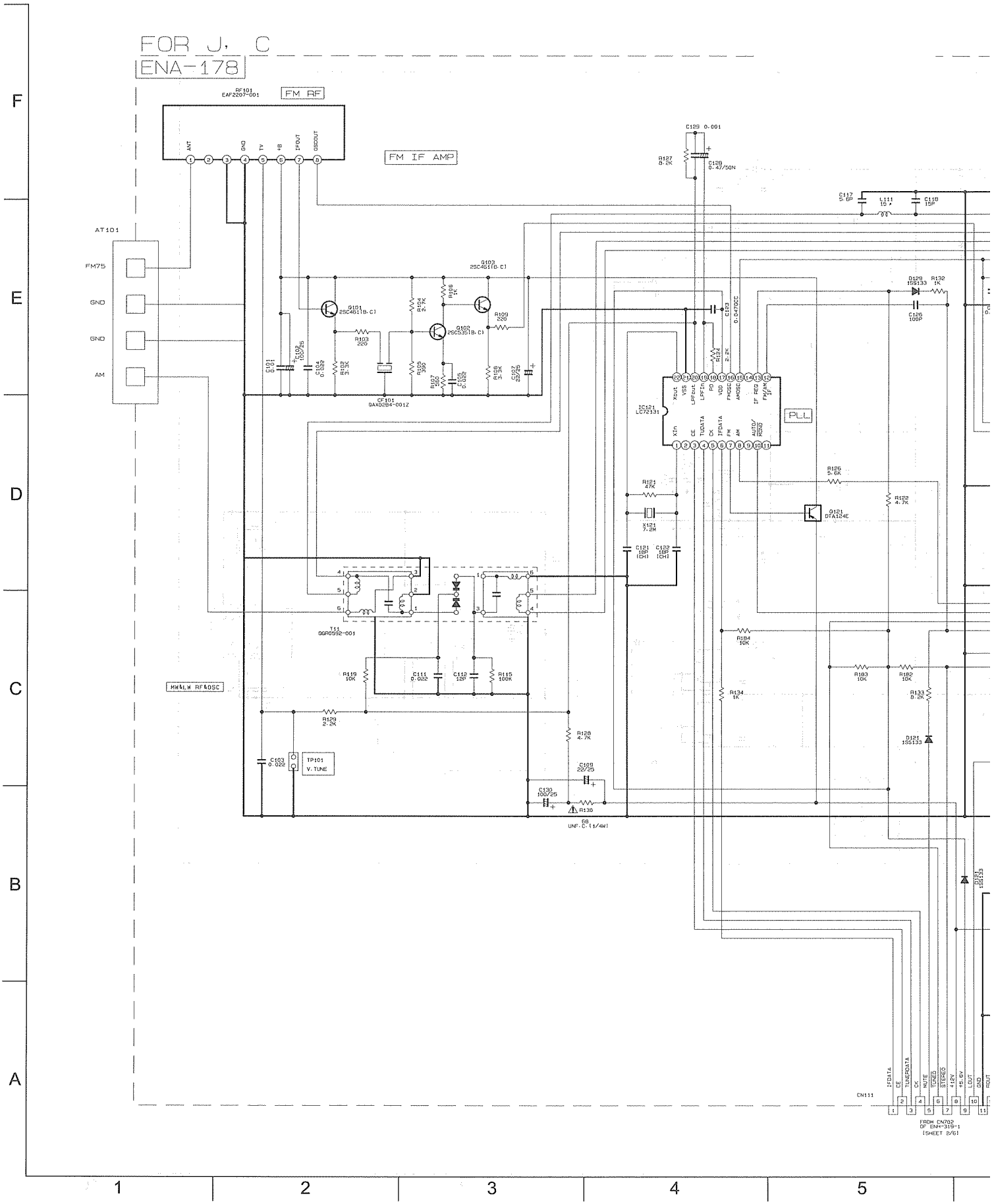

*MARK LIST

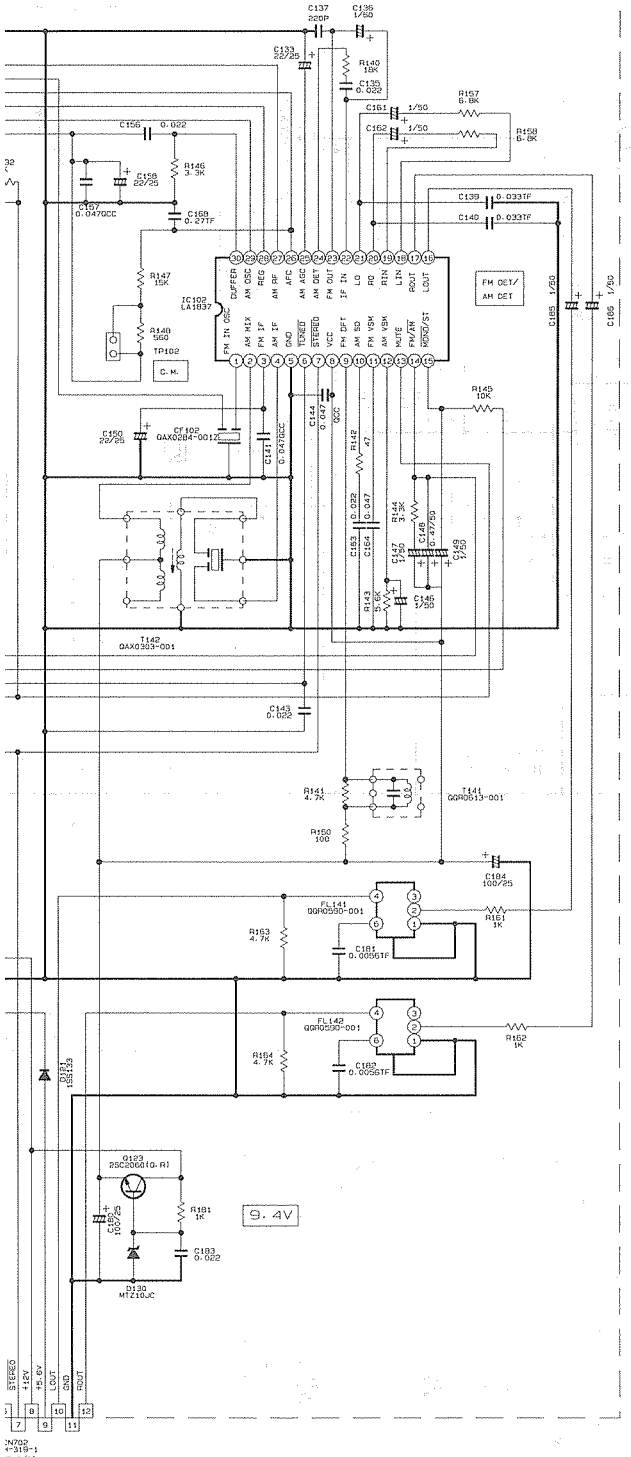
| Symbol \ Versions | J | C | B, E, EE, EN | W, WL, W, US, UT |
|---|---|---|---|---|
| R281, R282 R311, R312 R351~R354 R401, R402, R420 | UNF.C | UNF.C | UNF.F | UNF.F |
| R455 | UNF.C | P.THERMISTOR | | |
| R555 | 3.3K | 3.3K | 3.3K | 1.5K |
| R351 | 39 UNF.C | 39 UNF.F | 39 UNF.F | 100 UNF.F |
| D307, D308 | NONE | USED | USED | USED |
| R301, R302 C325, C326 C301~C306 C351~C355 C711~C723 | NONE | NONE | USED | NONE |
| R200 | 4.7 UNF.C (1/4W) | 1 | 1 | 1 |
| C407 | 470/6.3 | 470/6.3 | 2200/6.3 | 470/6.3 |
| D323 | USED | USED | USED | NONE |
| D323 | NONE | NONE | NONE | USED |

# CA-EX90/-EX90R

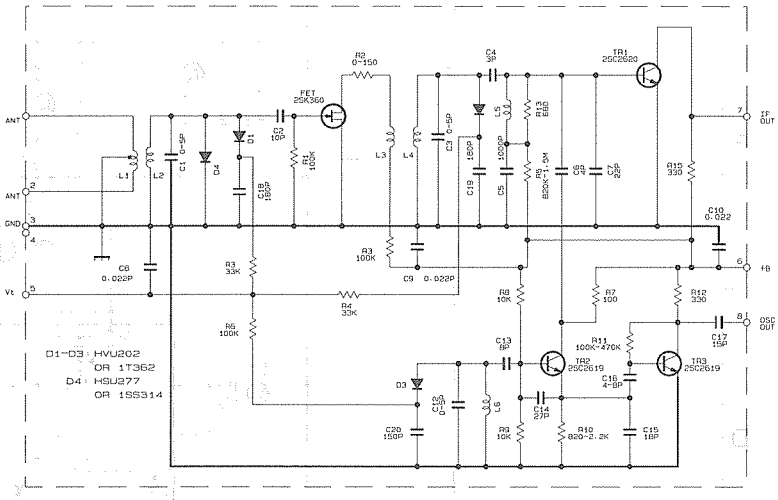


**[RE-EX90] Tunner for J. C.**



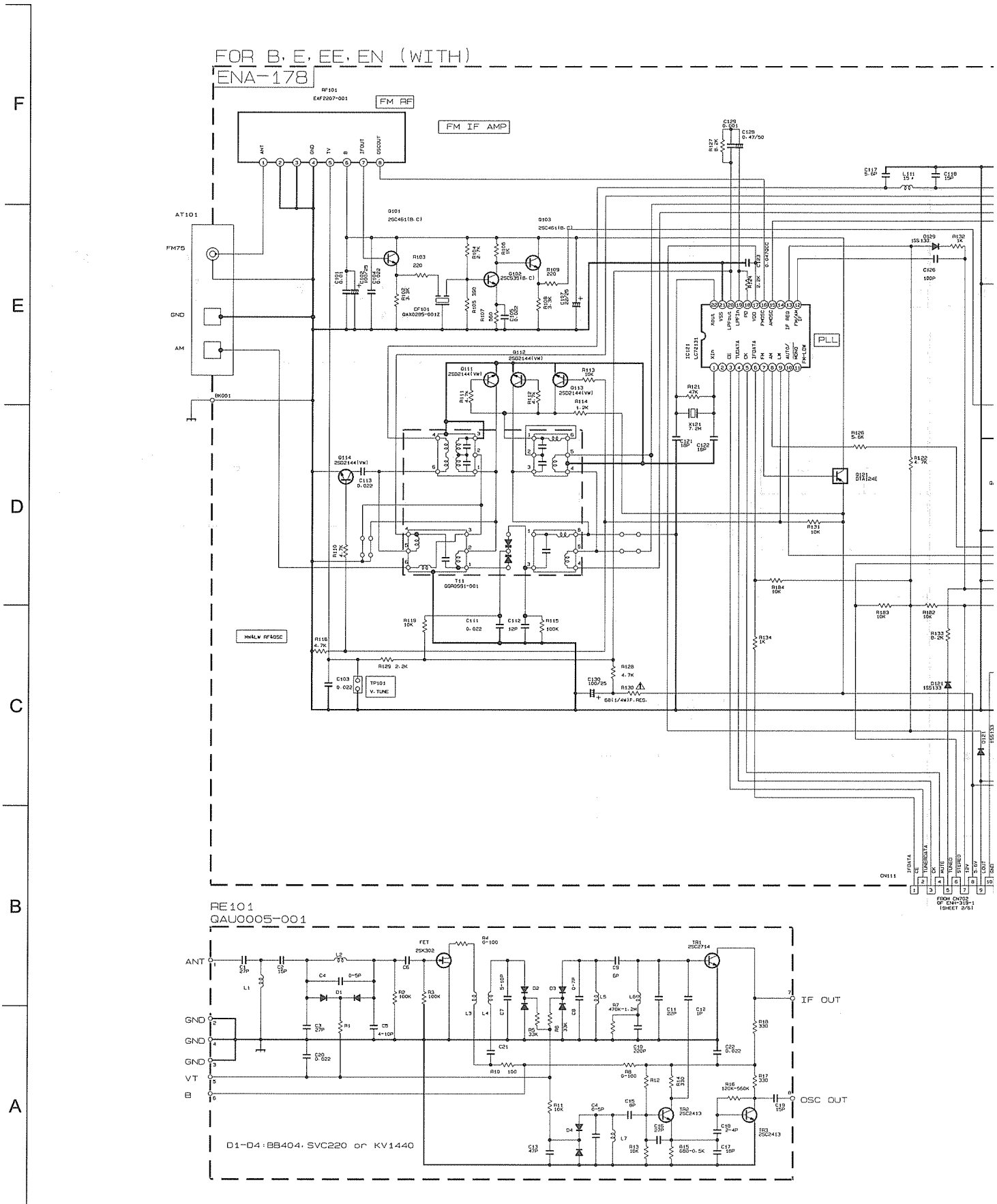


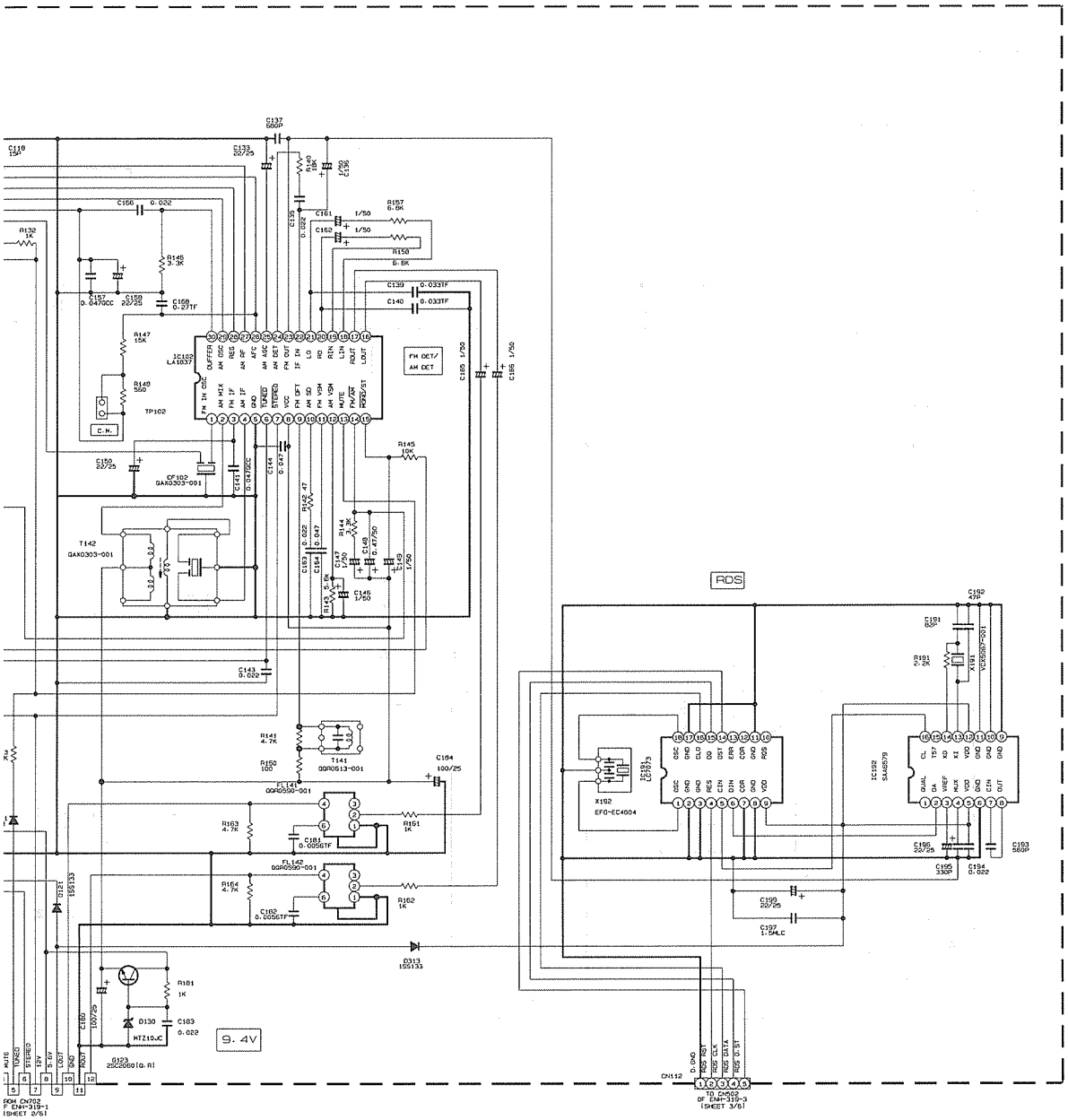
RF101
EAF2207-001



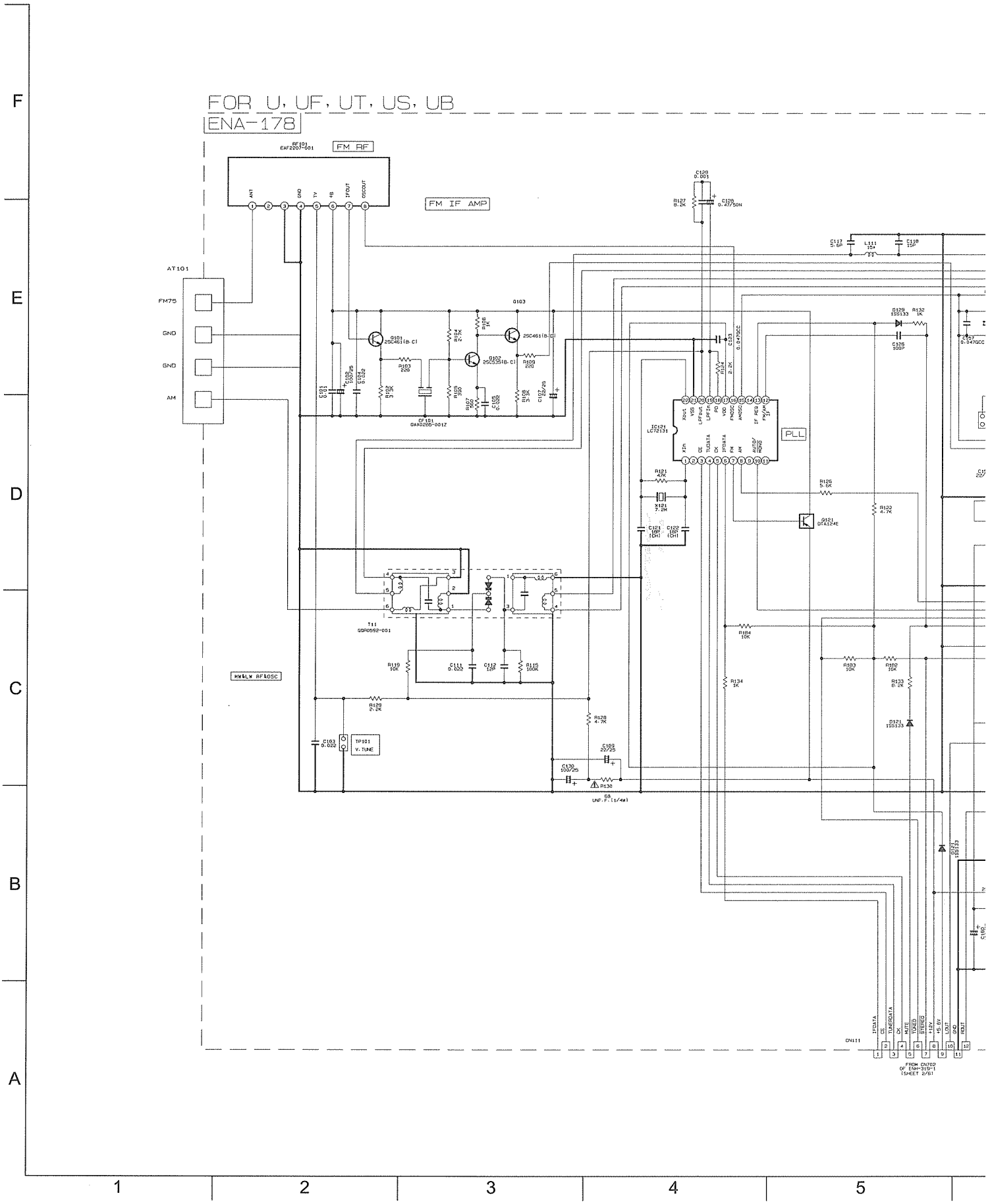

| 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|

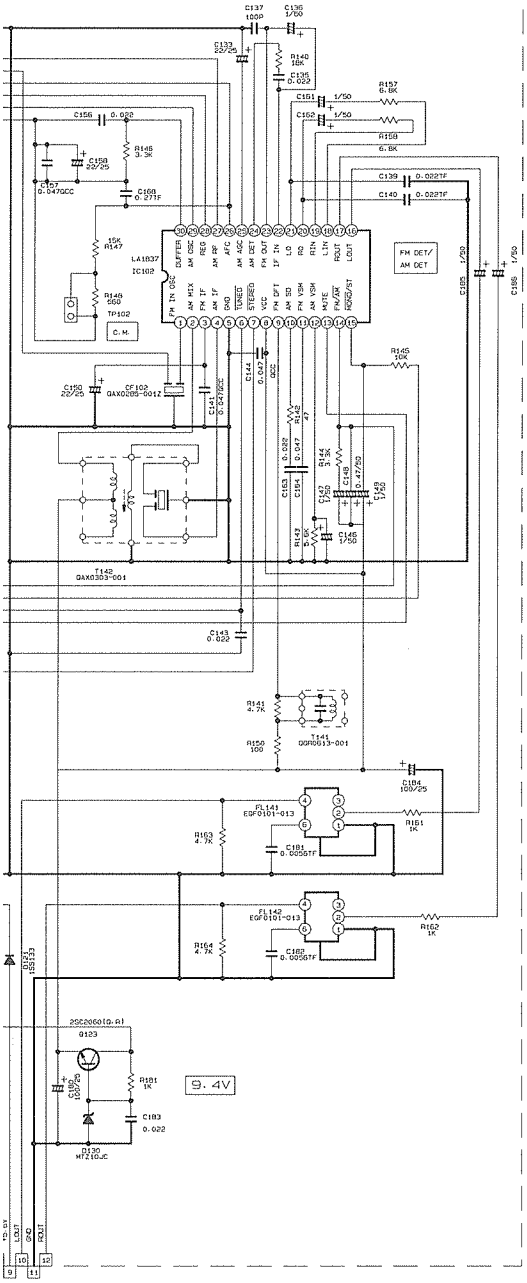
## [RX-EX90] Tunner for B, E, EE, EN

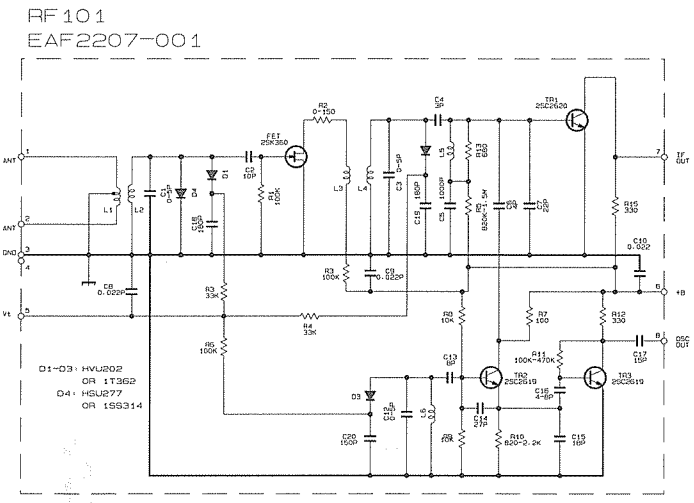



RDS
FM DET/
AM DET
9.4V
X102
EF0-EC4004
TD CN550
OF ENH-319-3
(SHEET 3/6)
ROM CN702
F ENH-319-1
(SHEET 3/6)

## [RX-EX90] Tunner for U, UF, UT, US, UB




9.4V


RF101
EAF2207-001
01-03: HVU202
OR 1T362
04: HSU277
OR 1SS314

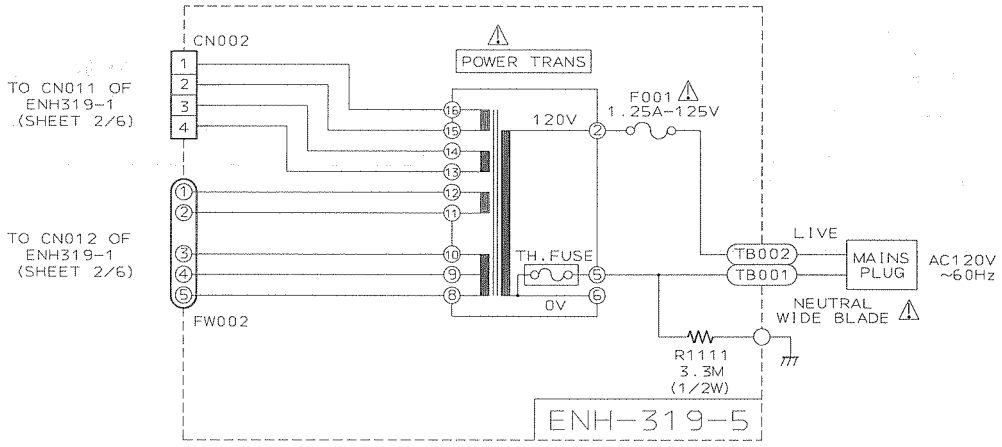
## [RX-EX90] Power Supply

EXPI
N

| SHEET No. | MODEL No. | CIRCUIT |
|---|---|---|
| 1/6 | RX-EX90/RX-EX90R/RX-EX70/RX-EX70R | PRIMARY |
| 2/6 | RX-EX90/RX-EX90R/RX-EX70/RX-EX70R | DC REGU |
| 3/6 | RX-EX90/RX-EX90R/RX-EX70/RX-EX70R | USER CO |
| 4/6 | RX-EX90/RX-EX70 | TUNER R |
| 5/6 | RX-EX90R/RX-EX70R | TUNER R |
| 6/6 | RX-EX90/RX-EX70 | TUNER R |

POWER SUPLLY SECTION

J, C

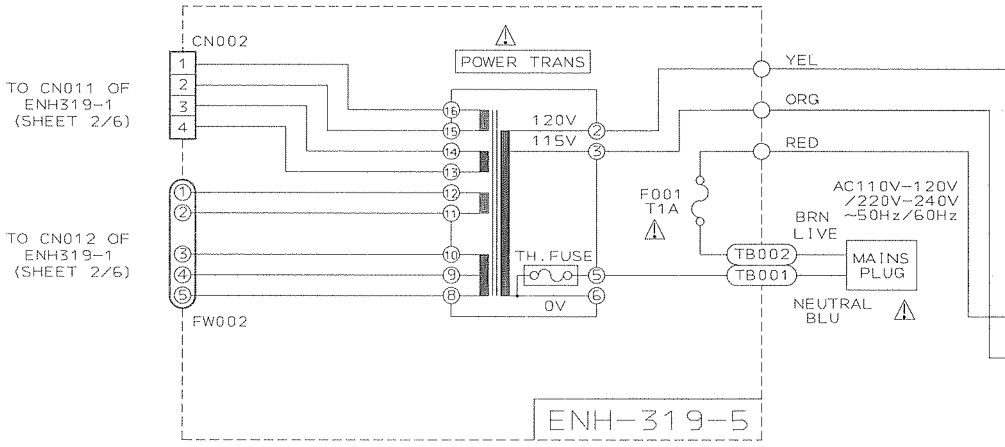



B/E

TO CN011 C ENH319-1 (SHEET 2/

TO CN012 C ENH319-1 (SHEET 2/

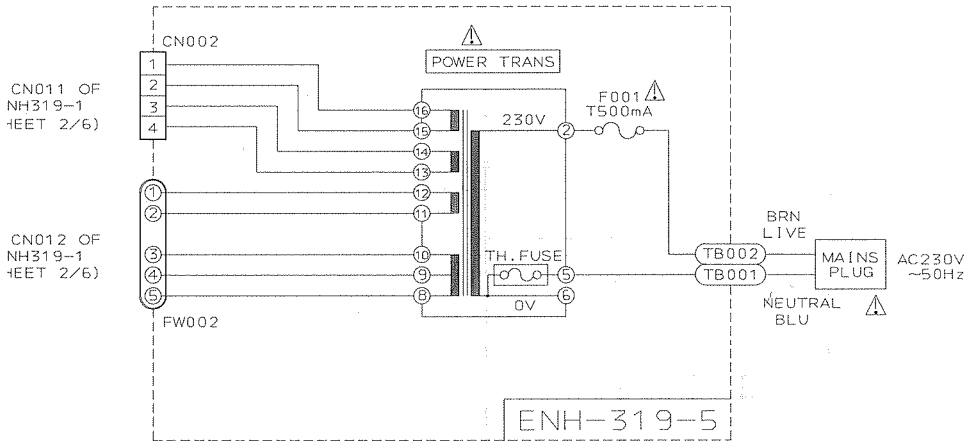
U, UB, UF, US, UT

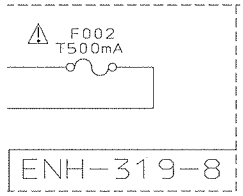


| EXPLANATION OF OVERALL OF SCHEMA |
| --- |
| MODEL RX-EX90/RX-EX90R/RX-EX70/RX-EX70R |

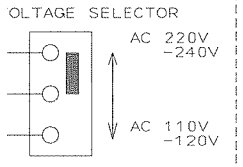
| ?CUITS DESCRIPTION |
| --- |
| MARY WITH TRANSFORMER |
| REGULATORS/AUDIO OUTPUT/EXTERNAL SIGNAL INPUT |
| R CONTROL KEYS/SYSTEM CONTROL LSI/FL DISPLAY |
| ER RF/IF/FM MULTIPLEX(ONLY J/C) |
| ER RF/IF/FM MULTIPLEX(ONLY B/E/EN/EE) |
| ER RF/IF/FM MULTIPLEX(ONLY U/US/UB/UF/UT) |

B/E/EE/EN




ENH-319-8



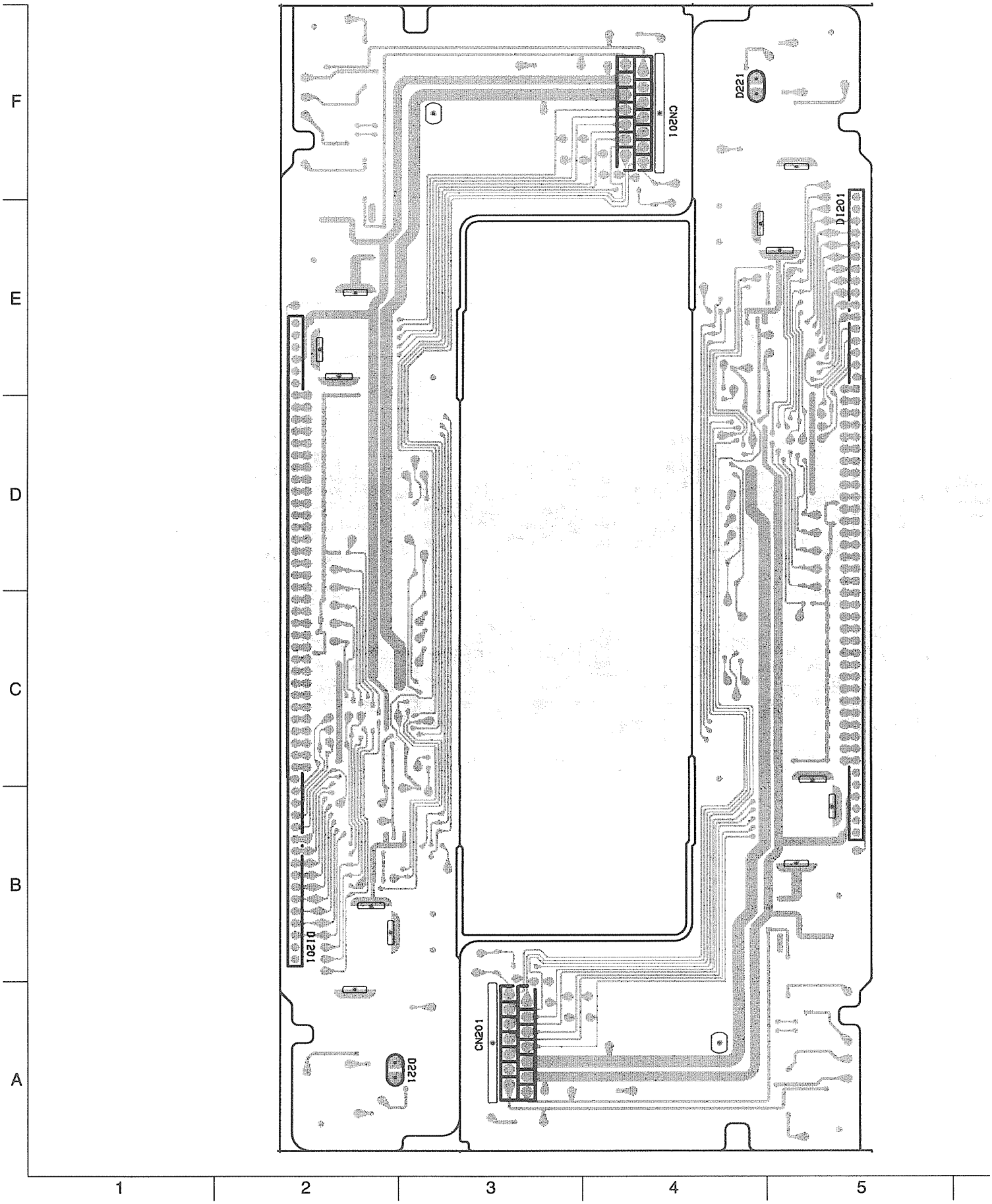

ENH-319-9

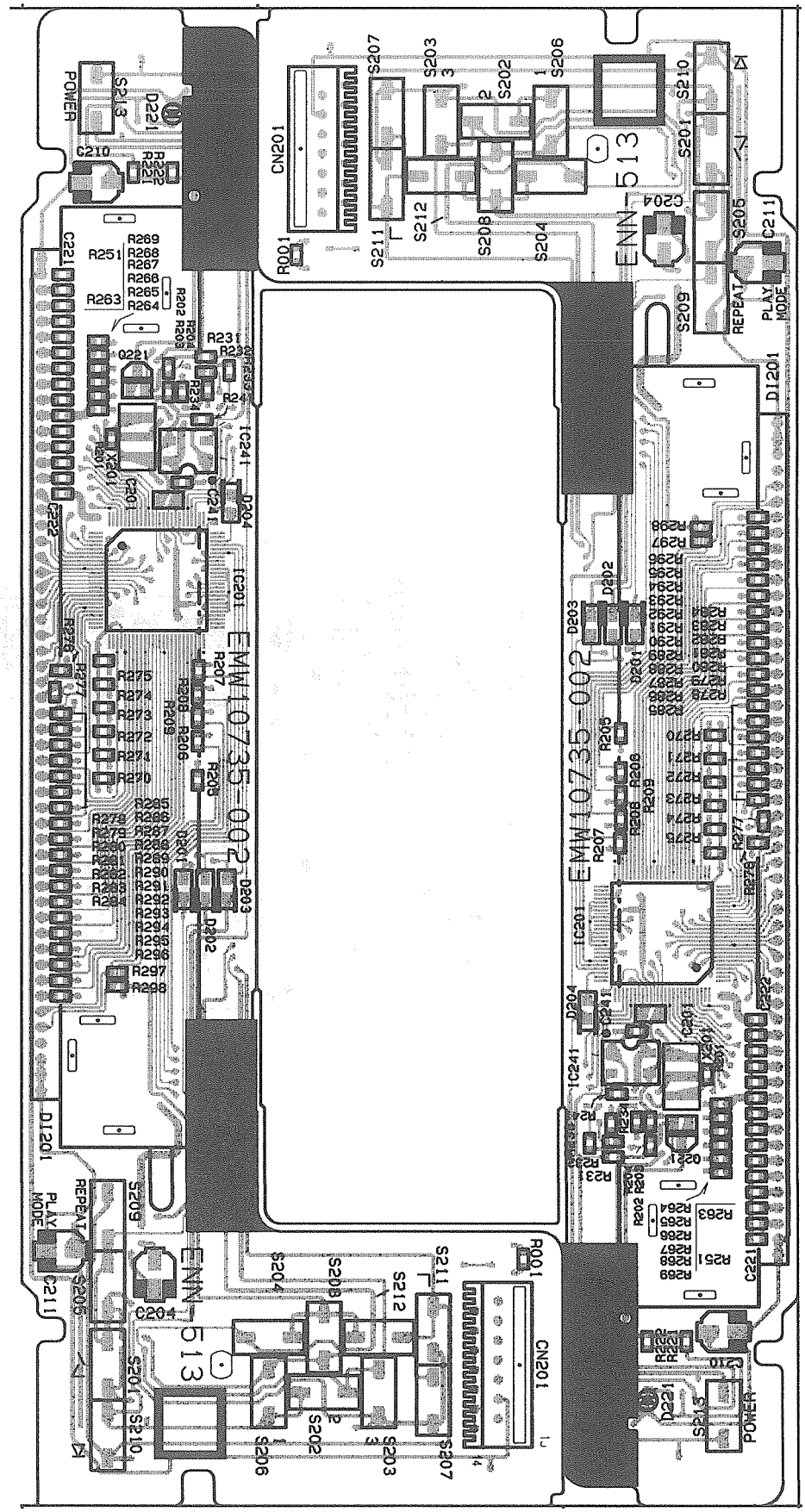
VERSION CODES

| | |
| --- | --- |
| J | U.S.A. |
| C | CANADA |
| EN | NORDIC COUNTRIES |
| E | CONTINENTAL EUROPE |
| EE | EASTERN EUROPE |
| B | U.K. |
| UB | HONKONG |
| US | SINGAPORE |
| UT | TAIWAN |
| UF | CHINA |
| U | UNIVERSAL EXCEPT ALL OF ABOVES |

NOTE:
MARK(*) IS TO SHOW DEVIATION IN VERSION
DETAILS ARE EXPLAINED NEAR MARK.

# Location of P. C. Board Parts




EMW10735-002
EMW10735-002
CN201
S201
S202
S203
S204
S205
S206
S207
S208
S209
S210
S211
S212
S213
POWER
REPEAT
PLAY MODE
D1201
IC201
IC241
X201
D201
D202
D203
D204
C201
C204
C210
C211
C221
C222
R001
R201
R202
R203
R204
R205
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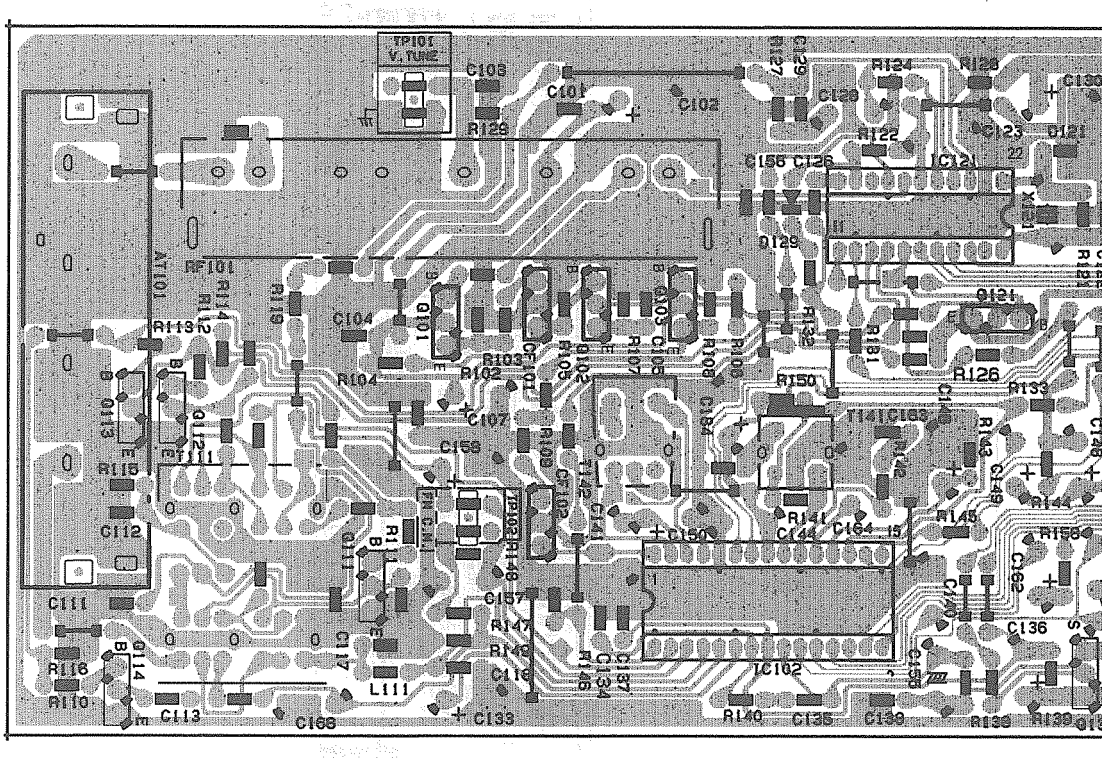
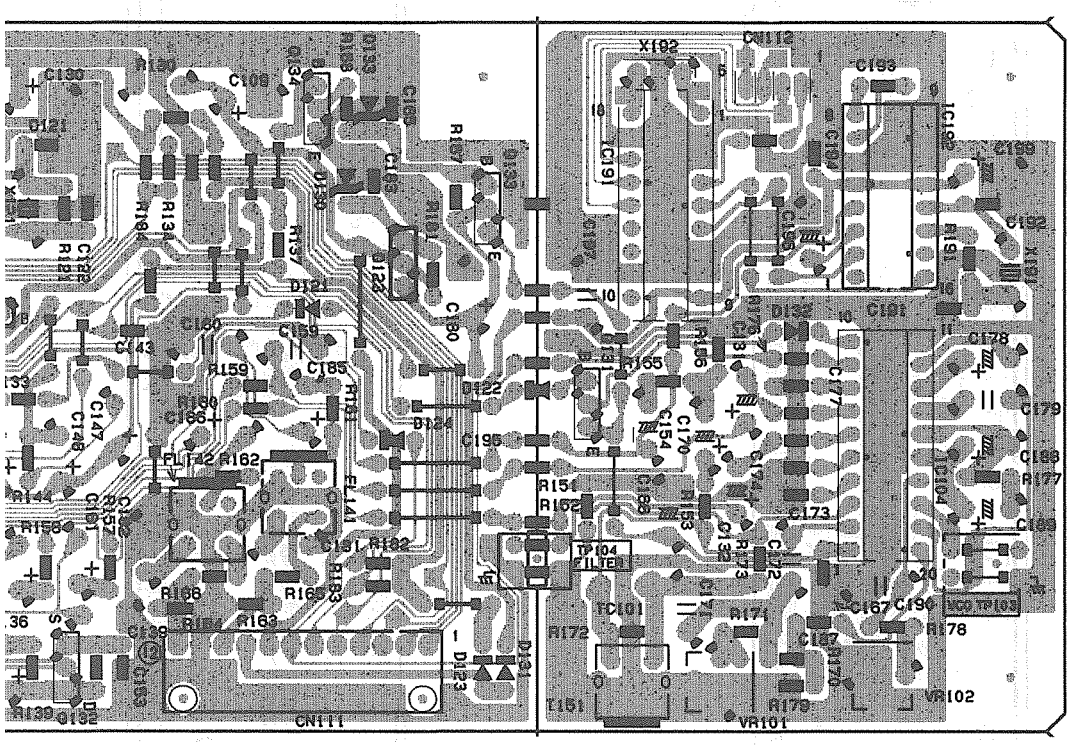
R298
Q221


TP101
V.TUNE
C103
C101
C102
R129
R124
R128
C130
R122
C123
D121
C156 C126
IC121
X121
R129
AT101
RF101
R114
R112
R119
C104
Q101
R113
R103
R102
C105
R106
R107
R108
R110
R104
C107
R132
R131
Q121
R150
R126
R133
C141 C158
R143
C149
C148
R144
R145
R158
C162
C140
C136
C158
R141
C144
C164
C142
C150
Q113
Q112
R115
C112
C111
C157
R147
R146
C116
C134
C145
C137
IC102
R116
R110
Q114
C113
C166
L111
C133
R140
C135
C139
R138
R139


X102
CN112
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C130
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C191
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# PARTS LIST

## [ RX-EX90 / RX-EX90R ]

1. Those parts can not to sent as a rule that has not printed or be displayed 「—」 on the parts list.
2. The printed circuit board will be not sent as a rule.
3. ⚠ Parts are safety assurance parts. When replacing those parts, make sure to use to specified one.
4. All printed circuit boards and its assemblies are not available as service parts.

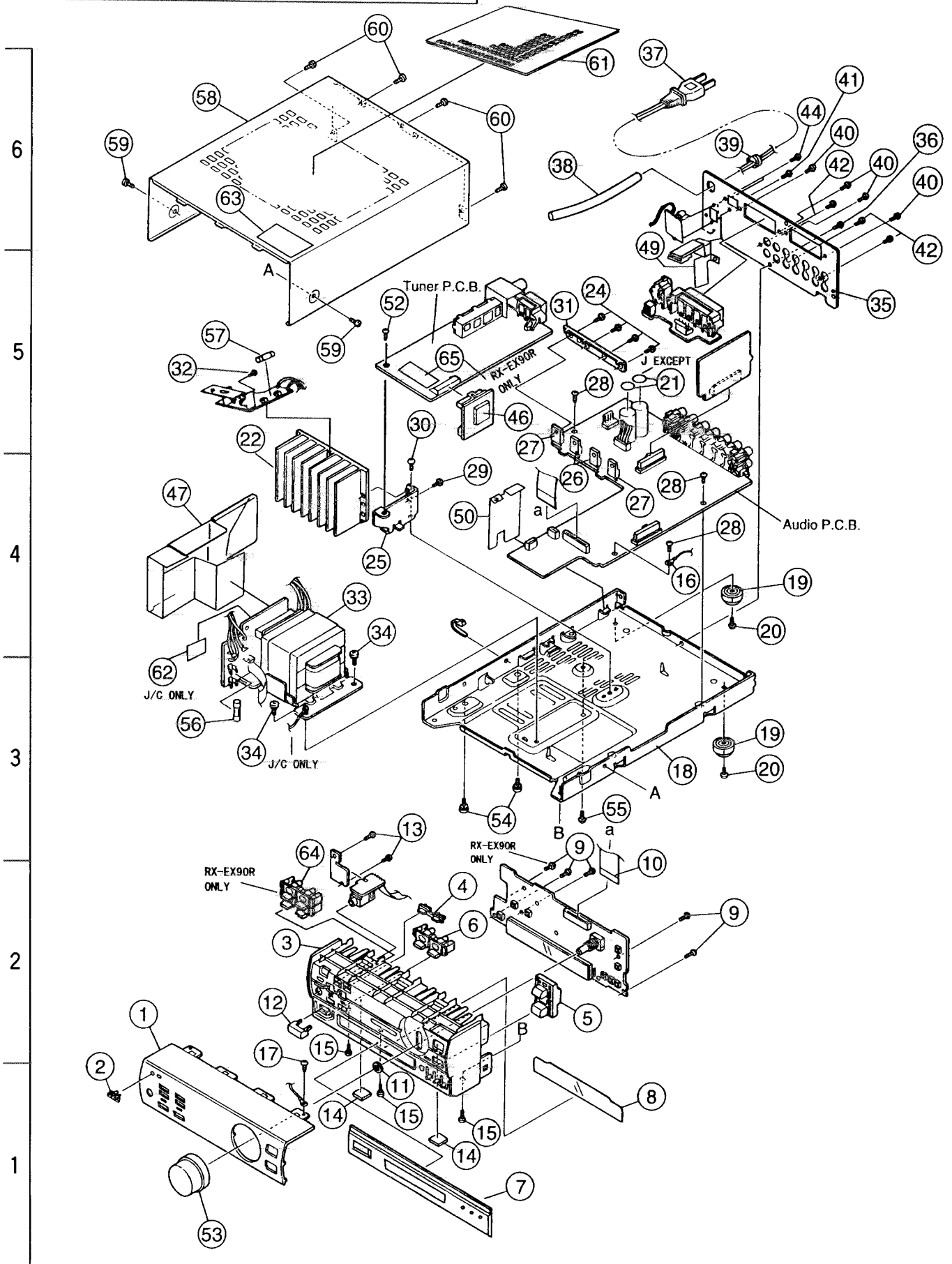
| Area Suffix | |
|---|---|
| **RX-EX90** | |
| C | Canada |
| J | U.S.A. |
| U | Other Areas |
| UB | Hong Kong |
| UF | China |
| US | Singapore |
| UT | Taiwan |
| **RX-EX90R** | |
| B | U.K |
| E | Continental Europe |
| EN | Northan Europe |
| EE | Eastern Europe |

- Contents -


General Exploded View and Parts List ---------- 3 - 2
Electrical Parts List---------- 3 - 5
Main P.C.B.---------- 3 - 5
Tuner P.C.B.(RX-EX90 C/J) ---------- 3 - 9
Tuner P.C.B.(RX-EX90 U/UB/UF/US/UT)---------- 3 - 10
Tuner P.C.B.(RX-EX90R B/E/EE/EN)---------- 3 - 11

## General Exploded View and Parts List

Block No. M1MM



■PARTS LIST Block No. M1MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 1 | LE20328-004A | FRONT PANEL | 1 | | CJ |
| | | | | | | UUBUFUSUT |
| | | LE20328-005A | FRONT PANEL | 1 | | BEEEEN |
| | 2 | E406971-001SM | JVC MARK | 1 | | |
| | 3 | LE10157-002A | FRONT BASE | 1 | | |
| | 4 | LE30549-001A | INDICATOR LENS | 1 | | |
| | 5 | LE20330-002A | PUSH BUTTON | 1 | | |
| | 6 | LE30569-003A | PUSH BUTTON | 1 | | |
| | 7 | LE30545-003A | WINDOW SCREEN | 1 | | |
| | 8 | LE30550-002A | FL SCREEN | 1 | | |
| | 9 | QYSDSF2608Z | SCREW | 4 | | CJUUBUFUSUT |
| | | | | 5 | | BEEEEN |
| | 10 | VWF1225-18008W | FLAT WIRE | 1 | | |
| | 11 | E71862-003 | VOLUME NUT | 1 | | |
| | 12 | LE30547-001A | PLAY CAP | 1 | | CJ |
| | | LE30547-002A | POWER CAP | 1 | | UUBUFUSUT |
| | | | | | | BEEEEN |
| | 13 | QYSDSF2608Z | SCREW | 2 | | |
| | 14 | E75896-001 | SPACER | 2 | | |
| | 15 | QYSDSG3006E | T. SCREW | 3 | | |
| | 16 | EWT025-003 | TERMINAL WIRE | 1 | | |
| | 17 | QYSDSG3006E | T. SCREW | 1 | | |
| | 18 | LE10158-001A | CHASSIS BASE | 1 | | |
| | 19 | E47227-029 | FOOT | 2 | | |
| | 20 | QYSBSG3008E | T. SCREW | 2 | | |
| | 21 | E75303-003 | SHIELD TAPE | 2 | | J EXCEPT |
| | 22 | LV30509-003A | HEAT SINK | 1 | | |
| | 23 | QYSBSG3008E | T. SCREW | 1 | | UUBUFUSUT |
| | | | | | | BEEEEN |
| | 24 | E73525-003 | SCREW | 4 | | |
| | 25 | LE30553-001A | HEAT SINK BRACKET | 1 | | |
| | 26 | 2SC4511/PY/ | SI. TRANSISTOR | 2 | Q315, Q316 | CJUUBUFUSUT |
| | | | | | | BEEEEN |
| | 27 | 2SA1725/PY/ | SI. TRANSISTOR | 2 | Q317, Q318 | CJUUBUFUSUT |
| | | | | | | BEEEEN |
| | 28 | QYSBSG3008E | T. SCREW | 3 | | |
| | 29 | QYSBSG3008E | T. SCREW | 1 | | |
| | 30 | QYSBST3006E | TAP. SCREW | 1 | | |
| | 31 | LE40351-001A | LEAF SPRING | 1 | | |
| | 32 | QYSBSG3008E | T. SCREW | 1 | | UUBUFUT |
| ⚠ | 33 | QQT0178-002 | POWER TRANSFORMER | 1 | T 001 | CJ |
| | | QQT0178-003 | POWER TRANSFORMER | 1 | T 001 | US |
| | | | | | | BEEEEN |
| | | QQT0178-004 | POWER TRANSFORMER | 1 | T 001 | UUBUFUT |
| | 34 | QYSDSTL4008E | SPECIAL SCREW | 2 | | |
| | 35 | LE20332-014A | REAR PANEL | 1 | | US |
| | | LE20332-027A | REAR PANEL | 1 | | J |
| | | LE20332-028A | REAR PANEL | 1 | | C |
| | | LE20332-029A | REAR PANEL | 1 | | UUBUF |
| | | LE20332-030A | REAR PANEL | 1 | | UT |
| | | LE20332-031A | REAR PANEL | 1 | | BEEN |
| | | LE20332-032A | REAR PANEL | 1 | | EE |

■PARTS LIST

Block No. M1MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| ⚠ | 37 | QMPR100-200-JC | POWER CORD | 1 | | UF |
| | | QMP1D00-200H | POWER CORD | 1 | | CJ |
| | | QMP3900-200 | POWER CORD | 1 | | UUS |
| | | | | | | EEEEN |
| | | QMP7520-200 | POWER CORD | 1 | | UT |
| | | QMP5530-0085BS | POWER CORD | 1 | | B |
| | 38 | QXTG709-220 | PROTECTOR TUBE | 1 | | |
| | 39 | QHS3876-162 | TIE BAND | 1 | | |
| | 40 | QYSBSGY3008E | SPECIAL SCREW | 4 | | |
| | 41 | QYSBSGY3008E | SPECIAL SCREW | 1 | | |
| | 42 | QYSBSGY3008E | SPECIAL SCREW | 3 | | |
| | 44 | QYSBSG2608M | T.SCREW | 2 | | UUBUFUSUT |
| | 46 | LV30064-001A | SPACER | 1 | | CJUUBUFUSUT |
| | | | | 2 | | BEEEEN |
| | 47 | LV30477-001A | SHIELD COVER | 1 | | |
| | 49 | LV40488-001A | SHIELD COVER | 1 | | UUBUFUT |
| | 50 | LV40471-001A | SHIELD COVER | 1 | | UUBUFUT |
| | 52 | QYSBSG3008E | T.SCREW | 1 | | |
| | 53 | LE30554-001A | VOLUME KNOB ASS'Y | 1 | | |
| | 54 | QYSDSTL4008E | SPECIAL SCREW | 2 | | |
| | 55 | QYSBSG3008E | T.SCREW | 1 | | |
| | 56 | QMF51E2-1R0-J1 | FUSE | 1 | F001 | UUBUFUSUT |
| | | QMF51E2-R50-J1 | FUSE | 1 | F001 | BEEEN |
| | | QMF51U1-1R25-J1 | FUSE | 1 | F001 | CJ |
| | 57 | QMF51E2-R50-J1 | FUSE | 1 | F002 | UUBUFUSUT |
| | 58 | LE20334-005A | METAL COVER | 1 | | CJ |
| | | | | | | BEEEEN |
| | | LE20334-006A | METAL COVER | 1 | | UUBUFUSUT |
| | 59 | QYSDSG3006N | T.SCREW | 2 | | |
| | 60 | QYSBSGG3008E | T.SCREW | 4 | | |
| | 61 | LV30362-001A | PROTECT SHEET | 1 | | UUBUFUSUT |
| | 62 | E75804-001 | CAUTION LABEL | 1 | | C |
| | | E75803-001 | CAUTION LABEL | 1 | | J |
| | 63 | LV40558-001A | CAUTION LABEL | 1 | | CJUUBUFUSUT |
| | | | | | | BEEEEN |
| | 64 | LV20089-001A | PUSH BUTTON | 1 | | BEEEEN |
| | 65 | LV30064-016A | SPACER | 1 | | BEEEEN |

■ Electrical parts list(Main P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC301 | NJM5532D | I.C(MONO-ANALOG) | |
| | IC501 | MN173222JABG | I.C(M) | |
| | IC502 | M35501FP | I.C(M) | |
| | IC520 | GP1U271X | INFRARED DETECT UNIT | |
| | IC701 | TC9164AN | I.C(DIGI-MOS) | |
| | IC702 | NJM5532D | I.C(MONO-ANALOG) | |
| | IC706 | LA2650 | I.C(MONO-ANALOG) | |
| | IC708 | TDA7439 | I.C(M) | |
| | | DIODES | | |
| | D201 | 11E2-T5 | SILICON | |
| | D202 | 11E2-T5 | SILICON | |
| | D203 | 11E2-T5 | SILICON | |
| | D204 | 11E2-T5 | SILICON | |
| | D205 | 11E2-T5 | SILICON | |
| | D206 | 11E2-T5 | SILICON | |
| | D207 | 11E2-T5 | SILICON | |
| | D208 | 11E2-T5 | SILICON | |
| | D211 | 11E2-T5 | SILICON | |
| | D280 | 11E2-T5 | SILICON | |
| | D281 | 11E2-T5 | SILICON | |
| | D282 | 11E2-T5 | SILICON | |
| | D283 | MTZJ30C-T2 | ZENER | |
| | D285 | MTZJ5.6C-T2 | ZENER | |
| | D292 | 1SS133-T2 | SI.DIODE | |
| | D293 | MTZJ5.1C-T2 | ZENER | |
| | D295 | 1SS133-T2 | SI.DIODE | |
| | D301 | 1SS133-T2 | SI.DIODE | |
| | D302 | 1SS133-T2 | SI.DIODE | |
| | D303 | 1SS133-T2 | SI.DIODE | |
| | D304 | 1SS133-T2 | SI.DIODE | |
| | D305 | 1SS133-T2 | SI.DIODE | |
| | D306 | 1SS133-T2 | SI.DIODE | |
| | D307 | SLR-342MC-T | L.E.D. | B C E EE EN U UB UF US UT |
| | D308 | SLR-342MC-T09 | L.E.D. | B C E EE EN U UB UF US UT |
| | D323 | MTZJ24C-T2 | ZENER | U UB UF US UT |
| | D401 | MTZJ18C-T2 | ZENER | |
| | D402 | MTZJ18C-T2 | ZENER | |
| | D404 | MTZJ5.6C-T2 | ZENER | |
| | D405 | MTZJ13A-T2 | ZENER | |
| | D406 | 1SS133-T2 | SI.DIODE | |
| | D407 | 1SS133-T2 | SI.DIODE | |
| | D408 | MTZJ6.2C-T2 | ZENER | |
| | D502 | 1SS133-T2 | SI.DIODE | |
| | D503 | 1SS133-T2 | SI.DIODE | |
| | D504 | 1SS133-T2 | SI.DIODE | B E EE EN U UB UF US UT |
| | D505 | 1SS133-T2 | SI.DIODE | U UB UF US UT |
| | D506 | 1SS133-T2 | SI.DIODE | |
| | D507 | 1SS133-T2 | SI.DIODE | |
| | D508 | 1SS133-T2 | SI.DIODE | B E EE EN |
| | D509 | 1SS133-T2 | SI.DIODE | |
| | D510 | 1SS133-T2 | SI.DIODE | |
| | D511 | 1SS133-T2 | SI.DIODE | |
| | D512 | 1SS133-T2 | SI.DIODE | |
| | D541 | SLR-342VC-T | L.E.D. | |
| | D542 | SLR-342MC-T | L.E.D. | |
| | D543 | SLR-342MC-T | L.E.D. | |
| | D740 | RD9.1JS/B3/-T2 | ZENER | |
| | D761 | RD9.1JS/B3/-T2 | ZENER | |
| | | TRANSISTORS | | |
| | Q281 | 2SB1357/EF/-T | SILICON | |
| | Q291 | DTC144ES | DIGITAL TRANSISTOR | |
| | Q292 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q301 | 2SC1775AV/EF/-T | SILICON | |
| | Q302 | 2SC1775AV/EF/-T | SILICON | |
| | Q303 | 2SA872AV/E/-T | SILICON | |
| | Q304 | 2SA872AV/E/-T | SILICON | |
| | Q305 | 2SA872AV/E/-T | SILICON | |
| | Q306 | 2SA872AV/E/-T | SILICON | |
| | Q307 | 2SC1775AV/EF/-T | SILICON | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | Q308 | 2SC1775AV/EF/-T | SILICON | |
| | Q309 | 2SD637/QR/ | SILICON | |
| | Q310 | 2SD637/QR/ | SILICON | |
| | Q311 | 2SC2235/OY/-T | SILICON | |
| | Q312 | 2SC2235/OY/-T | SILICON | |
| | Q313 | 2SA965/OY/-T | SILICON | |
| | Q314 | 2SA965/OY/-T | SILICON | |
| | Q315 | 2SC4511/PY/ | SI.TRANSISTOR | |
| | Q316 | 2SC4511/PY/ | SI.TRANSISTOR | |
| | Q317 | 2SA1725/PY/ | SI.TRANSISTOR | |
| | Q318 | 2SA1725/PY/ | SI.TRANSISTOR | |
| | Q319 | 2SC2240/GL/-T | SILICON | |
| | Q320 | 2SC2240/GL/-T | SILICON | |
| | Q321 | 2SA970/GL/-T | SILICON | |
| | Q322 | 2SC1740S/RS/-T | SI.TRANSISTOR | C J |
| | | 2SD400MP/EF/-T | SILICON | B E EE EN U UB UF US UT |
| | Q323 | 2SD2144S/VW/-T | SILICON | |
| | Q324 | 2SD2144S/VW/-T | SILICON | |
| | Q325 | DTA144ES | DIGITAL TRANSISTOR | |
| | Q327 | 2SA933S/RS/-T | SILICON | |
| | Q328 | 2SA933S/RS/-T | SILICON | |
| | Q401 | 2SD1944/JK/ | SI.TRANSISTOR | |
| | Q402 | 2SB1565/EF/ | SILICON | |
| | Q405 | 2SD2394/EF/ | SILICON | |
| | Q407 | 2SD400MP/EF/-T | SILICON | |
| | Q408 | 2SC1740S/RS/-T | SI.TRANSISTOR | |
| | Q409 | 2SC1740S/RS/-T | SI.TRANSISTOR | |
| | Q410 | 2SC1740S/RS/-T | SI.TRANSISTOR | |
| | Q411 | 2SA933AS/RS/-T | SILICON | |
| | Q501 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q502 | DTC114ES | DIGITAL TRANSISTOR | |
| | Q503 | DTA114ES | DIGITAL TRANSISTOR | |
| | Q504 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q505 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q506 | DTC144WS-T | SILICON | |
| | Q780 | 2SC1775AV/EF/-T | SILICON | |
| | Q791 | 2SD2144S/VW/-T | SILICON | |
| | Q792 | 2SD2144S/VW/-T | SILICON | |
| | Q793 | DTA144ES | DIGITAL TRANSISTOR | |
| | | CAPACITORS | | |
| | C001 | QCF31HZ-223Z | 0.022MF 50V CERAMIC | |
| | C201 | QTE1V27-338 | AL E.CAP. | |
| | C202 | QTE1V27-338 | AL E.CAP. | |
| | C203 | QCF31HZ-103Z | 0.01MF 50V CERAMIC | |
| | C205 | QCF31HZ-103Z | 0.01MF 50V CERAMIC | |
| | C211 | QETB1EM-108 | 1000MF 25V AL E.CAP. | |
| | C281 | QETC1EM-227ZN | 220MF 25V AL E.CAP. | |
| | C282 | QETB1HM-227 | 220MF 50V E.CAP. | |
| | C283 | QETB1HM-226E | 22MF 50V E.CAP. | |
| | C284 | QETB1HM-226E | 22MF 50V E.CAP. | |
| | C285 | QETB1HM-475E | 4.7MF 50V E.CAP. | |
| | C291 | QETB1HM-225 | 2.2MF 50V AL E.CAP. | |
| | C301 | QTE1E28-106Z | E.CAPA. I.M | |
| | C302 | QTE1E28-106Z | E.CAPA. I.M | |
| | C303 | QTE1E28-476Z | E.CAPA. I.M | |
| | C304 | QTE1E28-476Z | E.CAPA. I.M | |
| | C305 | QCS21HJ-221 | 220PF 50V CER.CAP. | |
| | C306 | QCS21HJ-221 | 220PF 50V CER.CAP. | |
| | C307 | QTE1E28-226Z | AL E.CAP. | |
| | C308 | QTE1E28-226Z | AL E.CAP. | |
| | C309 | QCSB1HJ-150Y | 15PF 50V CER.CAP. | |
| | C310 | QCSB1HJ-150Y | 15PF 50V CER.CAP. | |
| | C311 | QCSB1HJ-270Y | 27PF 50V CER.CAP. | |
| | C312 | QCSB1HJ-270Y | 27PF 50V CER.CAP. | |
| | C313 | QCS21HJ-470 | 47PF 50V CER.CAP. | |
| | C314 | QCS21HJ-470 | 47PF 50V CER.CAP. | |
| | C315 | QCS21HJ-470 | 47PF 50V CER.CAP. | |
| | C316 | QCS21HJ-470 | 47PF 50V CER.CAP. | |
| | C317 | QFN31HJ-104Z | 0.1MF 50V MYLAR CAP. | |
| | C318 | QFN31HJ-104Z | 0.1MF 50V MYLAR CAP. | |
| | C321 | QFZ0202-103Z | 0.01MF M.MYLAR | |

■ Electrical parts list(Main P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | C322 | QFZ0202-103Z | 0.01MF M.MYLAR | |
| | C323 | QETB1HM-105 | 1MF 50V AL E.CAP. | B E EE EN |
| | C325 | QCBB1HK-101Y | 100PF 50V CER.CAP. | B E EE EN |
| | C326 | QCBB1HK-101Y | 100PF 50V CER.CAP. | B E EE EN |
| | C381 | QFN31HJ-223ZN | 0.022MF 50V MYLAR CAP. | B E EE EN |
| | C382 | QFN31HJ-223ZN | 0.022MF 50V MYLAR CAP. | B E EE EN |
| | C383 | QDXB1CM-222Y | 2200PF 16V C CAP. | B E EE EN |
| | C384 | QDXB1CM-222Y | 2200PF 16V C CAP. | B E EE EN |
| | C385 | QCGB1HK-102 | 1000PF 50V CER.CAP. | B E EE EN |
| | C386 | QCGB1HK-102 | 1000PF 50V CER.CAP. | B E EE EN |
| | C391 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C392 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C393 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | B E EE EN |
| | C403 | QTE1E28-226Z | AL E.CAP. | |
| | C404 | QTE1E28-226Z | AL E.CAP. | |
| | C405 | QFN31HJ-103Z | 0.01MF 50V MYLAR CAP. | |
| | C406 | QFN31HJ-103Z | 0.01MF 50V MYLAR CAP. | |
| | C407 | QETB0JM-228 | 2200MF 6.3V AL E.CAP. | B E EE EN |
| | | QETB0JM-477 | 470MF 6.3V AL E.CAP. | C J U UB UF US UT |
| | C408 | QETC1CM-106Z | 10MF 16V AL E.CAP. | |
| | C409 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C410 | QETC1CM-106Z | 10MF 16V AL E.CAP. | |
| | C411 | QETC1CM-106Z | 10MF 16V AL E.CAP. | |
| | C412 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C413 | QEKC1HM-225Z | 2.2MF 50V ELECTRO | |
| | C414 | QETB1EM-476 | 47MF 25V AL E.CAP. | |
| | C502 | QETB0JM-476 | 47MF 6.3V AL E.CAP. | |
| | C503 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C504 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C505 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C506 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C507 | QER61HM-105Z | 1MF 50V AL E.CAP. | |
| | C508 | QER61HM-105Z | 1MF 50V AL E.CAP. | |
| | C509 | QETB1HM-225 | 2.2MF 50V AL E.CAP. | |
| | C510 | QDC31HJ-220Z | 22PF 50V C.CAPA.I.M | |
| | C511 | QCSB1HJ-470 | 47PF 50V CER.CAP. | |
| | C512 | QDC31HJ-270Z | 27PF 50V ACCAPA.I.M | |
| | C513 | QCBB1HK-471Y | 470PF 50V CER.CAP. | |
| | C514 | QCBB1HK-471Y | 470PF 50V CER.CAP. | |
| | C515 | QEZ0329-10AZ | ELECTRO | |
| | C521 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C701 | QTE1E28-106Z | E.CAPA.I.M | |
| | C702 | QTE1E28-106Z | E.CAPA.I.M | |
| | C703 | QTE1E28-226Z | AL E.CAP. | |
| | C704 | QTE1E28-226Z | AL E.CAP. | |
| | C705 | QCS21HJ-101A | 100PF 50V CER.CAP. | |
| | C706 | QCS21HJ-101A | 100PF 50V CER.CAP. | |
| | C707 | QCBB1HK-471Y | 470PF 50V CER.CAP. | |
| | C711 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C712 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C713 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C714 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C715 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C716 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C717 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C718 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C719 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C720 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C721 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C722 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C723 | QCBB1HK-471Y | 470PF 50V CER.CAP. | B E EE EN |
| | C740 | QTE1C28-476Z | E.CAPA.I.M | |
| | C741 | QTE1H28-105Z | E.CAP. | |
| | C742 | QTE1H28-105Z | E.CAP. | |
| | C743 | QFN31HJ-473ZN | 0.047MF 50V MYLAR CAP. | |
| | C744 | QTE1H28-475Z | E.CAP. | |
| | C745 | QTE1H28-474Z | E.CAPA.I.M | |
| | C746 | QFN31HJ-473ZN | 0.047MF 50V MYLAR CAP. | |
| | C747 | QTE1H28-474Z | E.CAPA.I.M | |
| | C749 | QFN31HJ-473ZN | 0.047MF 50V MYLAR CAP. | |
| | C750 | QFN31HJ-473ZN | 0.047MF 50V MYLAR CAP. | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | C751 | QTE1H28-105Z | E.CAP. | |
| | C752 | QTE1C28-476Z | E.CAPA.I.M | |
| | C761 | QTE1E28-106Z | E.CAPA.I.M | |
| | C762 | QTE1E28-106Z | E.CAPA.I.M | |
| | C763 | QFN81HJ-272 | 2700PF 50V METAL.MYLAR | |
| | C764 | QFN81HJ-272 | 2700PF 50V METAL.MYLAR | |
| | C765 | QFN31HJ-223ZN | 0.022MF 50V MYLAR CAP. | |
| | C766 | QFN31HJ-223ZN | 0.022MF 50V MYLAR CAP. | |
| | C767 | QFVC1HJ-224Z | 0.22MF 50V T.FILM | |
| | C768 | QFVC1HJ-224Z | 0.22MF 50V T.FILM | |
| | C769 | QFN31HJ-563Z | 0.056MF 50V MYLAR CAP. | |
| | C770 | QFN31HJ-563Z | 0.056MF 50V MYLAR CAP. | |
| | C771 | QFN81HJ-183 | 0.018MF 50V METAL.MYLAR | |
| | C772 | QFN81HJ-183 | 0.018MF 50V METAL.MYLAR | |
| | C773 | QTE1C28-226Z | E.CAPA.I.M | |
| | C774 | QTE1C28-107Z | E.CAPA.I.M | |
| | C775 | QTE1C28-226Z | E.CAPA.I.M | |
| | C785 | QTE1E28-106Z | E.CAPA.I.M | |
| | C786 | QTE1E28-106Z | E.CAPA.I.M | |
| | C789 | QETB1HM-475E | 4.7MF 50V E.CAP. | |
| | C915 | QCBB1HK-331Y | 330PF 50V CER.CAP. | |
| | | RESISTORS | | |
| | R280 | QRE141J-1R0Y | 1 1/4W R.NETWORK | B C E EE EN U UB UF US UT |
| | | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | R281 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | | QRZ9006-4R7X | 4.7 FUSIBLE | B C E EE EN U UB UF US UT |
| | R282 | QRJ146J-181X | 180 1/4W R.NETWORK | J |
| | | QRZ9005-181X | 180 FUSIBLE | B C E EE EN U UB UF US UT |
| | R283 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R292 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R293 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R294 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R303 | QRE141J-623Y | 62K 1/4W R.NETWORK | |
| | R304 | QRE141J-623Y | 62K 1/4W R.NETWORK | |
| | R305 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R306 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R307 | QRA14CF-1001Y | 1K 1/4W R.NETWORK | |
| | R308 | QRA14CF-1001Y | 1K 1/4W R.NETWORK | |
| | R309 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R310 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R311 | QRJ146J-331X | 330 1/4W R.NETWORK | J |
| | | QRZ9005-331X | 330 FUSIBLE | B C E EE EN U UB UF US UT |
| | R312 | QRJ146J-331X | 330 1/4W R.NETWORK | J |
| | | QRZ9005-331X | 330 FUSIBLE | B C E EE EN U UB UF US UT |
| | R313 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R314 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R315 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R316 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R317 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R318 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R319 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R320 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R321 | QRE141J-820Y | 82 1/4W R.NETWORK | |
| | R322 | QRE141J-820Y | 82 1/4W R.NETWORK | |
| | R323 | QRE141J-820Y | 82 1/4W R.NETWORK | |
| | R324 | QRE141J-820Y | 82 1/4W R.NETWORK | |
| | R325 | QRE141J-333Y | 33K 1/4W R.NETWORK | |
| | R326 | QRE141J-333Y | 33K 1/4W R.NETWORK | |
| | R327 | QRE141J-621Y | 620 1/4W R.NETWORK | |
| | R328 | QRE141J-621Y | 620 1/4W R.NETWORK | |
| | R329 | QRJ146J-221X | 220 1/4W R.NETWORK | |
| | R330 | QRJ146J-221X | 220 1/4W R.NETWORK | |
| | R331 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | | QRZ9006-4R7X | 4.7 FUSIBLE | B C E EE EN U UB UF US UT |
| | R332 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |

■ Electrical parts list(Main P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R332 | QRZ9006-4R7X | 4.7 FUSIBLE | B C E EE EN U UB UF US UT |
| | R333 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | | QRZ9006-4R7X | 4.7 FUSIBLE | B C E EE EN U UB UF US UT |
| | R334 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | | QRZ9006-4R7X | 4.7 FUSIBLE | B C E EE EN U UB UF US UT |
| | R335 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R336 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R337 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R338 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R339 | QRE141J-822Y | 8.2K 1/4W R.NETWORK | |
| | R340 | QRE141J-822Y | 8.2K 1/4W R.NETWORK | |
| | R341 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R342 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R343 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R344 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R345 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R346 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R347 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R348 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R349 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R350 | QRE141J-823Y | 82K 1/4W R.NETWORK | |
| | R351 | QRJ146J-390X | 39 1/4W R.NETWORK | C J |
| | | QRZ9005-101X | 100 FUSIBLE | U UB UF US UT |
| | | QRZ9005-390X | 39 FUSIBLE RES. | B E EE EN |
| | R353 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R354 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R355 | QRE141J-152Y | 1.5K 1/4W R.NETWORK | U UB UF US UT |
| | | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R361 | QRJ146J-681X | 680 1/4W R.NETWORK | |
| | R362 | QRJ146J-681X | 680 1/4W R.NETWORK | |
| | R363 | QRJ146J-471X | 470 1/4W R.NETWORK | |
| | R364 | QRJ146J-471X | 470 1/4W R.NETWORK | |
| | R365 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R366 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R371 | QRE141J-154Y | 150K 1/4W R.NETWORK | |
| | R372 | QRE141J-154Y | 150K 1/4W R.NETWORK | |
| | R381 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | B E EE EN |
| | R382 | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | B E EE EN |
| | R383 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R384 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R391 | QRE141J-181Y | 180 1/4W R.NETWORK | |
| | R392 | QRE141J-181Y | 180 1/4W R.NETWORK | |
| | R395 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R396 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R401 | QRJ146J-100X | 10 1/4W R.NETWORK | J |
| | | QRZ9005-100X | 10 FUSIBLE | B C E EE EN U UB UF US UT |
| | R402 | QRJ146J-470X | 47 1/4W R.NETWORK | J |
| | | QRZ9005-470X | 47 FUSIBLE | B C E EE EN U UB UF US UT |
| | R403 | QRE141J-122Y | 1.2K 1/4W R.NETWORK | |
| | R404 | QRE141J-122Y | 1.2K 1/4W R.NETWORK | |
| | R405 | QAD0095-4R7Z | 4.7Ω POSITIVE THE | B C E EE EN U UB UF US UT |
| | | QRJ146J-4R7X | 4.7 1/4W R.NETWORK | J |
| | R406 | QRE141J-621Y | 620 1/4W R.NETWORK | |
| | R407 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R408 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R409 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R410 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R411 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R412 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R413 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R414 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R415 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R416 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R420 | QRJ146J-100X | 10 1/4W R.NETWORK | J |
| | | QRZ9005-100X | 10 FUSIBLE | B C E EE EN U UB UF US UT |
| | R421 | QRE141J-470Y | 47 1/4W R.NETWORK | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R502 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R503 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R504 | QRE141J-181Y | 180 1/4W R.NETWORK | |
| | R505 | QRE141J-271Y | 270 1/4W R.NETWORK | |
| | R506 | QRE141J-220Y | 22 1/4W R.NETWORK | |
| | R507 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R508 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R509 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R510 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R530 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R531 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R532 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R533 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R705 | QRE141J-393Y | 39K 1/4W R.NETWORK | |
| | R706 | QRE141J-393Y | 39K 1/4W R.NETWORK | |
| | R707 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R711 | QRV14CF-1002Y | 10K 1/4W M.FILM | |
| | R712 | QRV14CF-1002Y | 10K 1/4W M.FILM | |
| | R715 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R716 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R719 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R720 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R721 | QRE141J-153Y | 15K 1/4W R.NETWORK | |
| | R722 | QRE141J-153Y | 15K 1/4W R.NETWORK | |
| | R725 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R726 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R727 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R728 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R729 | QRE141J-913Y | 91K 1/4W R.NETWORK | |
| | R730 | QRE141J-913Y | 91K 1/4W R.NETWORK | |
| | R733 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R745 | QRE141J-471Y | 470 1/4W R.NETWORK | |
| | R746 | QRE141J-224Y | 220K 1/4W R.NETWORK | |
| | R747 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R748 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R749 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R760 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R761 | QRJ146J-471X | 470 1/4W R.NETWORK | J |
| | | QRL022J-471 | 470 2W OXIDE METAL | B C E EE EN U UB UF US UT |
| | R764 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R765 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R766 | QRE141J-392Y | 3.9K 1/4W R.NETWORK | |
| | R767 | QRE141J-392Y | 3.9K 1/4W R.NETWORK | |
| | R789 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R791 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R792 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R793 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R794 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R795 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R796 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R917 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R918 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R1111 | QRZ9044-335 | 3.3M COMPOSITION | C J |
| | | OTHERS | | |
| | | | PRINTED BOARD | |
| | | EMW10733-103 | CIR BOARD | |
| | | E61380-029 | CAUTION LABEL | C |
| | | | | J |
| | | E67132-TR50 | FUSE LABEL | B |
| | | | | E |
| | | | | EE |
| | | | | EN |
| | J105 | QNB0089-001 | SPEAKER TERMINAL | |
| | J301 | QMS3L40-EDOH | PIN JACK | |
| | J701 | QNN0174-001 | PIN JACK | |
| | J702 | QNN0174-001 | PIN JACK | |
| | J703 | QNN0284-001 | PIN JACK | |
| | J901 | EMV7127-003 | CONNECT TERMINAL | |
| | L301 | QQLZ005-R45 | INDUCTOR | |
| | L302 | QQLZ005-R45 | INDUCTOR | |
| | L901 | QQL231K-1R0Y | INDUCTOR L.M | |

# CA-EX90/-EX90R

■ Electrical parts list(Main P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | S501 | QSW0499-001Z | PUSH SW I.M | |
| | S502 | QSW0499-001Z | PUSH SW I.M | |
| | S503 | QSW0499-001Z | PUSH SW I.M | |
| | S504 | QSW0499-001Z | PUSH SW I.M | |
| | S505 | QSW0499-001Z | PUSH SW I.M | |
| | S506 | QSW0499-001Z | PUSH SW I.M | |
| | S507 | QSW0499-001Z | PUSH SW I.M | |
| | S508 | QSW0499-001Z | PUSH SW I.M | |
| | S509 | QSW0499-001Z | PUSH SW I.M | B E EE EN |
| | S510 | QSW0499-001Z | PUSH SW I.M | B E EE EN |
| | S511 | QSW0499-001Z | PUSH SW I.M | B E EE EN |
| | S512 | QSW0499-001Z | PUSH SW I.M | B E EE EN |
| | X501 | QAX0250-001 | CRYSTAL | |
| | CN002 | EWS284-010 | SOCKET WIRE ASSY | |
| | CN011 | QGA3901C1-04 | 4P CONNECTOR | |
| | CN012 | QGD2501C1-05Z | SOCKET I.M | |
| | CN301 | QGB2510J1-14 | CONNECTOR | |
| | CN303 | QGB2510K2-14 | CONNECTOR | |
| | CN401 | QGA3901C1-04 | 4P CONNECTOR | |
| | CN402 | EWS284-009 | SOCKET WIRE ASSY | |
| | CN501 | QGF1205F1-25 | CONNECTOR | |
| | CN502 | EWS265-A413 | SOCKET WIRE ASSY | B E EE EN |
| | CN601 | QGB2510K2-12 | CONNECTOR | |
| | CN602 | QGB2510J1-12 | CONNECTOR | |
| | CN701 | QGF1205C1-25 | CONNECTOR | |
| | CN702 | QGB2510J1-12 | CONNECTOR | |
| | CN713 | QGD2501C1-03Z | SOCKET I.M | |
| | CN714 | QGD2501C1-03Z | SOCKET I.M | |
| | CN903 | QGD2503F1-03 | SOCKET | |
| | DI500 | QLF0029-002 | FLUORESCENT DISPLAY TUBE | |
| | EP001 | QNZ0136-001Z | IM EARTH PLATE | |
| | EP002 | QNZ0136-001Z | IM EARTH PLATE | |
| | EP003 | LV40417-001A | CONNECTOR BRACKET | U UB UF US UT |
| | FH501 | LE30640-001A | FL HOLDER | |
| | FH502 | LE30640-002A | FL HOLDER | |
| | FS501 | E3400-431 | FELT SPACER | |
| | FS502 | E3400-431 | FELT SPACER | |
| | FT001 | QNG0020-001Z | FUSE CLIP | |
| | FT002 | QNG0020-001Z | FUSE CLIP | |
| | FT003 | QNG0020-001Z | FUSE CLIP | U UB UF US UT |
| | FT004 | QNG0020-001Z | FUSE CLIP | U UB UF US UT |
| | FW002 | EWR35B-13LST | FLAT WIRE | |
| | FW401 | EWR33B-13LST | FLAT WIRE | |
| | FW703 | EWR36B-20LST | FLAT WIRE | |
| | JS501 | QSW0502-001 | SW | |
| | RY301 | QSK0042-001 | RELAY | |
| | SP501 | VYH7653-001 | I.C.PROTECTOR | |
| | SP502 | VYH7653-006 | I.C.PROTECTOR | |
| | SW001 | QSW0513-001 | SLIDE SW. | U UB UF US UT |
| | TB001 | QNZ0079-001Z | TAB I.M | |
| | TB002 | QNZ0079-001Z | TAB I.M | |
| | TW007 | QUB110-12ZLPP | CONNECTOR WIRE ASSY | C J |

■ Electrical parts list(Tuner P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC 102 | LA1837 | I.C(MONO-ANALOG) | |
| | IC 121 | LC72131 | I.C(M) | |
| | | DIODES | | |
| | D 121 | 1SS133-T2 | SI.DIODE | |
| | D 123 | 1SS133-T2 | SI.DIODE | |
| | D 126 | 1SS133-T2 | SI.DIODE | |
| | D 129 | 1SS133-T2 | SI.DIODE | |
| | D 130 | MTZJ10C-T2 | ZENER | |
| | | TRANSISTORS | | |
| | Q 101 | 2SC461/BC/-T | SILICON | |
| | Q 102 | 2SC535/BC/-T | SILICON | |
| | Q 103 | 2SC461/BC/-T | SILICON | |
| | Q 121 | DTA124ES-T | SILICON | |
| | Q 123 | 2SC2060/QR/-T | SILICON | |
| | | CAPACITORS | | |
| | C 101 | QDYB1CM-103Y | C CAP. | |
| | C 102 | QETC1EM-107Z | AL E.CAP. | |
| | C 103 | QDVB1EZ-223Y | C CAP. | |
| | C 104 | QDVB1EZ-223Y | C CAP. | |
| | C 105 | QDVB1EZ-223Y | C CAP. | |
| | C 107 | QETC1EM-226ZM | E.CAP. | |
| | C 109 | QETC1EM-226ZM | E.CAP. | |
| | C 111 | QDVB1EZ-223Y | C CAP. | |
| | C 112 | QDCB1HJ-120Y | C CAP. | |
| | C 117 | QCSB1HK-5R6Y | CER.CAP. (S) | |
| | C 118 | QCSB1HJ-150Y | CER.CAP. | |
| | C 121 | QDCB1HJ-180Y | C CAP. | |
| | C 122 | QDCB1HJ-180Y | C CAP. | |
| | C 123 | QDX31EM-473Z | C CAP. | |
| | C 126 | QCBB1HK-101Y | CER.CAP. (S) | |
| | C 128 | QENB1HM-474 | NP E.CAP. | |
| | C 129 | QCGB1HK-102 | CER.CAP.-S | |
| | C 130 | QETC1EM-107Z | AL E.CAP. | |
| | C 133 | QETC1EM-226ZM | E.CAP. | |
| | C 134 | QCBB1HK-331Y | CER.CAP. (S) | |
| | C 135 | QDVB1EZ-223Y | C CAP. | |
| | C 136 | QETN1HM-105Z | AL E.CAP. | |
| | C 137 | QCBB1HK-221Y | CER.CAP. (S) | |
| | C 139 | QFLB1HJ-333 | MYLAR CAP. | |
| | C 140 | QFLB1HJ-333 | MYLAR CAP. | |
| | C 141 | QDX31EM-473Z | C CAP. | |
| | C 143 | QDVB1EZ-223Y | C CAP. | |
| | C 144 | QDX31EM-473Z | C CAP. | |
| | C 146 | QETN1HM-105Z | AL E.CAP. | |
| | C 147 | QETN1HM-105Z | AL E.CAP. | |
| | C 148 | QETN1HM-474Z | AL E.CAP. | |
| | C 149 | QETN1HM-105Z | AL E.CAP. | |
| | C 150 | QETC1EM-226ZM | E.CAP. | |
| | C 156 | QDVB1EZ-223Y | C CAP. | |
| | C 157 | QDX31EM-473Z | C CAP. | |
| | C 158 | QETC1EM-226ZM | E.CAP. | |
| | C 161 | QETN1HM-105Z | AL E.CAP. | |
| | C 162 | QETN1HM-105Z | AL E.CAP. | |
| | C 163 | QDVB1EZ-223Y | C CAP. | |
| | C 164 | QDX31EM-473Z | C CAP. | |
| | C 168 | QCZ0205-155 | C.CAP. | |
| | C 180 | QETC1EM-107Z | AL E.CAP. | |
| | C 181 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 182 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 183 | QDVB1EZ-223Y | C CAP. | |
| | C 184 | QETC1EM-107Z | AL E.CAP. | |
| | C 185 | QETN1HM-105Z | AL E.CAP. | |
| | C 186 | QETN1HM-105Z | AL E.CAP. | |
| | | RESISTORS | | |
| | R 102 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 103 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 104 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R 105 | QRE141J-391Y | 390 1/4W R.NETWORK | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R 106 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 107 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 108 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 109 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 115 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R 119 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 121 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R 122 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 124 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 126 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 127 | QRE141J-822Y | 8.2K 1/4W R.NETWORK | |
| | R 128 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 129 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 130 | QRJ146J-680X | 68 1/4W R.NETWORK | |
| | R 132 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 133 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 134 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 140 | QRE141J-183Y | 18K 1/4W CARBON RES. | |
| | R 141 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 142 | QRE141J-470Y | 47 1/4W R.NETWORK | |
| | R 143 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 144 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 145 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 146 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 147 | QRE141J-153Y | 15K 1/4W R.NETWORK | |
| | R 148 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 150 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R 157 | QRE141J-682Y | 6.8K 1/4W R.NETWORK | |
| | R 158 | QRE141J-682Y | 6.8K 1/4W R.NETWORK | |
| | R 161 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 162 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 163 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 164 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 181 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 182 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 183 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 184 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | | OTHERS | | |
| | | EMW10684-004 | PRINTED BOARD | |
| | L 111 | QQL121K-150Y | INDUCTOR I.M | |
| | T 111 | QQR0592-001 | RF COIL | |
| | T 141 | QQR0613-001 | I.F.TRANSFORMER | |
| | T 142 | QAX0303-001 | CERAMIC FILTER | |
| | X 121 | QAX0251-001Z | RESONATOR I | |
| | AT 101 | QNB0008-001 | ANT TERMINAL | |
| | CF 101 | QAX0284-001Z | CERAMIC FILTER | |
| | CF 102 | QAX0284-001Z | CERAMIC FILTER | |
| | CN 111 | QGB2510K1-12 | CONNECTOR | |
| | FL 141 | QQR0590-001 | LOWPASS FILTER | |
| | FL 142 | QQR0590-001 | LOWPASS FILTER | |
| | RF 101 | EAF2207-001 | FRONT END | |

■ Electrical parts list(Tuner P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC 102 | LA1837 | I.C(MONO-ANALOG) | |
| | IC 121 | LC72131 | I.C(M) | |
| | | DIODES | | |
| | D 121 | 1SS133-T2 | SI.DIODE | |
| | D 123 | 1SS133-T2 | SI.DIODE | |
| | D 126 | 1SS133-T2 | SI.DIODE | |
| | D 129 | 1SS133-T2 | SI.DIODE | |
| | D 130 | MTZJ10C-T2 | ZENER | |
| | | TRANSISTORS | | |
| | Q 101 | 2SC461/BC/-T | SILICON | |
| | Q 102 | 2SC535/BC/-T | SILICON | |
| | Q 103 | 2SC461/BC/-T | SILICON | |
| | Q 121 | DTA124ES-T | SILICON | |
| | Q 123 | 2SC2060/QR/-T | SILICON | |
| | | CAPACITORS | | |
| | C 101 | QDYB1CM-103Y | C CAP. | |
| | C 102 | QETC1EM-107Z | AL E.CAP. | |
| | C 103 | QDVB1EZ-223Y | C CAP. | |
| | C 104 | QDVB1EZ-223Y | C CAP. | |
| | C 105 | QDVB1EZ-223Y | C CAP. | |
| | C 107 | QETC1EM-226ZM | E.CAP. | |
| | C 109 | QETC1EM-226ZM | E.CAP. | |
| | C 111 | QDVB1EZ-223Y | C CAP. | |
| | C 112 | QDCB1HJ-120Y | C CAP. | |
| | C 117 | QCSB1HK-5R6Y | CER.CAP.(S) | |
| | C 118 | QCSB1HJ-150Y | CER.CAP. | |
| | C 121 | QDCB1HJ-180Y | C CAP. | |
| | C 122 | QDCB1HJ-180Y | C CAP. | |
| | C 123 | QDX31EM-473Z | C CAP. | |
| | C 126 | QCBB1HK-101Y | CER.CAP.(S) | |
| | C 128 | QENB1HM-474 | NP E.CAP. | |
| | C 129 | QCGB1HK-102 | CER.CAP.-S | |
| | C 130 | QETC1EM-107Z | AL E.CAP. | |
| | C 133 | QETC1EM-226ZM | E.CAP. | |
| | C 134 | QCBB1HK-331Y | CER.CAP.(S) | |
| | C 135 | QDVB1EZ-223Y | C CAP. | |
| | C 136 | QETN1HM-105Z | AL E.CAP. | |
| | C 137 | QCBB1HK-101Y | CER.CAP.(S) | |
| | C 139 | QFLB1HJ-223 | MYLAR CAP. | |
| | C 140 | QFLB1HJ-223 | MYLAR CAP. | |
| | C 141 | QDX31EM-473Z | C CAP. | |
| | C 143 | QDVB1EZ-223Y | C CAP. | |
| | C 144 | QDX31EM-473Z | C CAP. | |
| | C 146 | QETN1HM-105Z | AL E.CAP. | |
| | C 147 | QETN1HM-105Z | AL E.CAP. | |
| | C 148 | QETN1HM-474Z | AL E.CAP. | |
| | C 149 | QETN1HM-105Z | AL E.CAP. | |
| | C 150 | QETC1EM-226ZM | E.CAP. | |
| | C 156 | QDVB1EZ-223Y | C CAP. | |
| | C 157 | QDX31EM-473Z | C CAP. | |
| | C 158 | QETC1EM-226ZM | E.CAP. | |
| | C 161 | QETN1HM-105Z | AL E.CAP. | |
| | C 162 | QETN1HM-105Z | AL E.CAP. | |
| | C 163 | QDVB1EZ-223Y | C CAP. | |
| | C 164 | QDX31EM-473Z | C CAP. | |
| | C 168 | QCZ0205-155 | C.CAP. | |
| | C 180 | QETC1EM-107Z | AL E.CAP. | |
| | C 181 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 182 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 183 | QDVB1EZ-223Y | C CAP. | |
| | C 184 | QETC1EM-107Z | AL E.CAP. | |
| | C 185 | QETN1HM-105Z | AL E.CAP. | |
| | C 186 | QETN1HM-105Z | AL E.CAP. | |
| | | RESISTORS | | |
| | R 102 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 103 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 104 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R 105 | QRE141J-391Y | 390 1/4W R.NETWORK | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R 106 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 107 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 108 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 109 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 115 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R 119 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 121 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R 122 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 124 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 126 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 127 | QRE141J-822Y | 8.2K 1/4W R.NETWORK | |
| | R 128 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 129 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 130 | QRZ9005-680X | 68 FUSIBLE | |
| | R 132 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 133 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 134 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 140 | QRE141J-183Y | 18K 1/4W CARBON RES. | |
| | R 141 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 142 | QRE141J-470Y | 47 1/4W R.NETWORK | |
| | R 143 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 144 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 145 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 146 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 147 | QRE141J-273Y | 27K 1/4W R.NETWORK | |
| | R 148 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 150 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R 157 | QRE141J-682Y | 6.8K 1/4W R.NETWORK | |
| | R 158 | QRE141J-682Y | 6.8K 1/4W R.NETWORK | |
| | R 161 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 162 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 163 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 164 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 181 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 182 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 183 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 184 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | | OTHERS | | |
| | | EMW10684-004 | PRINTED BOARD | |
| | L 111 | QQL121K-150Y | INDUCTOR I.M | |
| | T 111 | QQR0592-001 | RF COIL | |
| | T 141 | QQR0613-001 | I.F.TRANSFORMER | |
| | T 142 | QAX0303-001 | CERAMIC FILTER | |
| | X 121 | QAX0251-001Z | RESONATOR I | |
| | AT 101 | QNB0008-001 | ANT TERMINAL | |
| | CF 101 | QAX0285-001Z | CERAMIC FILTER | |
| | CF 102 | QAX0285-001Z | CERAMIC FILTER | |
| | CN 111 | QGB2510K1-12 | CONNECTOR | |
| | FL 141 | QQR0590-001 | LOWPASS FILTER | |
| | FL 142 | QQR0590-001 | LOWPASS FILTER | |
| | RF 101 | EAF2207-001 | FRONT END | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC 102 | LA1837 | I.C(MONO-ANALOG) | |
| | IC 121 | LC72131 | I.C(M) | |
| | IC 191 | LC7073 | I.C(DIGI-MOS) | |
| | IC 192 | SAA6579 | I.C(M) | |
| | | DIODES | | |
| | D 121 | 1SS133-T2 | SI.DIODE | |
| | D 123 | 1SS133-T2 | SI.DIODE | |
| | D 126 | 1SS133-T2 | SI.DIODE | |
| | D 129 | 1SS133-T2 | SI.DIODE | |
| | D 130 | MTZJ10C-T2 | ZENER | |
| | D 131 | 1SS133-T2 | SI.DIODE | |
| | | TRANSISTORS | | |
| | Q 101 | 2SC461/BC/-T | SILICON | |
| | Q 102 | 2SC535/BC/-T | SILICON | |
| | Q 103 | 2SC461/BC/-T | SILICON | |
| | Q 111 | 2SD2144S/VW/-T | SILICON | |
| | Q 112 | 2SD2144S/VW/-T | SILICON | |
| | Q 113 | 2SD2144S/VW/-T | SILICON | |
| | Q 114 | 2SD2144S/VW/-T | SILICON | |
| | Q 121 | DTA124ES-T | SILICON | |
| | Q 123 | 2SC2060/QR/-T | SILICON | |
| | | CAPACITORS | | |
| | C 101 | QDYB1CM-103Y | C CAP. | |
| | C 102 | QETC1EM-107Z | AL E.CAP. | |
| | C 103 | QDVB1EZ-223Y | C CAP. | |
| | C 104 | QDVB1EZ-223Y | C CAP. | |
| | C 105 | QDVB1EZ-223Y | C CAP. | |
| | C 107 | QETC1EM-226ZM | E.CAP. | |
| | C 109 | QETC1EM-226ZM | E.CAP. | |
| | C 111 | QDVB1EZ-223Y | C CAP. | |
| | C 112 | QDCB1HJ-120Y | C CAP. | |
| | C 113 | QDVB1EZ-223Y | C CAP. | |
| | C 117 | QCSB1HK-5R6Y | CER.CAP.(S) | |
| | C 118 | QCSB1HJ-150Y | CER.CAP. | |
| | C 121 | QDCB1HJ-180Y | C CAP. | |
| | C 122 | QDCB1HJ-180Y | C CAP. | |
| | C 123 | QDX31EM-473Z | C CAP. | |
| | C 126 | QCBB1HK-101Y | CER.CAP.(S) | |
| | C 128 | QENB1HM-474 | NP E.CAP. | |
| | C 129 | QCGB1HK-102 | CER.CAP.-S | |
| | C 130 | QETC1EM-107Z | AL E.CAP. | |
| | C 133 | QETC1EM-226ZM | E.CAP. | |
| | C 134 | QDXB1CM-222Y | C CAP. | |
| | C 135 | QDVB1EZ-223Y | C CAP. | |
| | C 136 | QETN1HM-105Z | AL E.CAP. | |
| | C 137 | QCBB1HK-391Y | CER.CAP. | |
| | C 139 | QFLB1HJ-473 | MYLAR CAP. | |
| | C 140 | QFLB1HJ-473 | MYLAR CAP. | |
| | C 141 | QDX31EM-473Z | C CAP. | |
| | C 143 | QDVB1EZ-223Y | C CAP. | |
| | C 144 | QDX31EM-473Z | C CAP. | |
| | C 146 | QETN1HM-105Z | AL E.CAP. | |
| | C 147 | QETN1HM-105Z | AL E.CAP. | |
| | C 148 | QETN1HM-474Z | AL E.CAP. | |
| | C 149 | QETN1HM-105Z | AL E.CAP. | |
| | C 150 | QETC1EM-226ZM | E.CAP. | |
| | C 156 | QDVB1EZ-223Y | C CAP. | |
| | C 157 | QDX31EM-473Z | C CAP. | |
| | C 158 | QETC1EM-226ZM | E.CAP. | |
| | C 161 | QETN1HM-105Z | AL E.CAP. | |
| | C 162 | QETN1HM-105Z | AL E.CAP. | |
| | C 163 | QDVB1EZ-223Y | C CAP. | |
| | C 164 | QDX31EM-473Z | C CAP. | |
| | C 168 | QCZ0205-155 | C.CAP. | |
| | C 180 | QETC1EM-107Z | AL E.CAP. | |
| | C 181 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 182 | QFLB1HJ-562 | MYLAR CAP. | |
| | C 183 | QDVB1EZ-223Y | C CAP. | |
| | C 184 | QETC1EM-107Z | AL E.CAP. | |
| | C 185 | QETN1HM-105Z | AL E.CAP. | |
| | C 186 | QETN1HM-105Z | AL E.CAP. | |

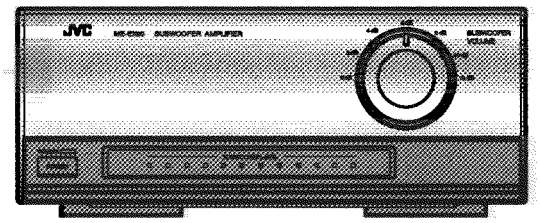
| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | C 191 | QCBB1HK-820Y | CER.CAP.(S) | |
| | C 192 | QCSB1HJ-470 | CER.CAP.(S) | |
| | C 193 | QCBB1HK-561Y | CER.CAP.(S) | |
| | C 194 | QDVB1EZ-223Y | C CAP. | |
| | C 195 | QCBB1HK-331Y | CER.CAP.(S) | |
| | C 196 | QETC1EM-226ZM | E.CAP. | |
| | C 197 | QCZ0205-155 | C.CAP. | |
| | C 199 | QETC1EM-226ZM | E.CAP. | |
| | | RESISTORS | | |
| | R 102 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 103 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 104 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R 105 | QRE141J-391Y | 390 1/4W R.NETWORK | |
| | R 106 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 107 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 108 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 109 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R 110 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 111 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 112 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 113 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 114 | QRE141J-122Y | 1.2K 1/4W R.NETWORK | |
| | R 115 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R 116 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 119 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 121 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R 122 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 124 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 126 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 127 | QRE141J-822Y | 8.2K 1/4W R.NETWORK | |
| | R 128 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 129 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R 130 | QRZ9005-680X | 68 FUSIBLE | |
| | R 131 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 132 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 133 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 134 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 140 | QRE141J-563Y | 56K 1/4W R.NETWORK | |
| | R 141 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 142 | QRE141J-470Y | 47 1/4W R.NETWORK | |
| | R 143 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 144 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R 145 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 146 | QRE141J-562Y | 5.6K 1/4W R.NETWORK | |
| | R 147 | QRE141J-273Y | 27K 1/4W R.NETWORK | |
| | R 148 | QRE141J-561Y | 560 1/4W R.NETWORK | |
| | R 150 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R 157 | QRE141J-182Y | 1.8K 1/4W R.NETWORK | |
| | R 158 | QRE141J-182Y | 1.8K 1/4W R.NETWORK | |
| | R 161 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 162 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 163 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 164 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R 181 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R 182 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 183 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 184 | QRE141J-103Y | 10K 1/4W R.NETWORK | |
| | R 191 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | | OTHERS | | |
| | | EMW10684-004 | PRINTED BOARD | |
| | L 111 | QQL121K-150Y | INDUCTOR I.M | |
| | T 111 | QQR0591-001 | RF COIL | |
| | T 141 | QQR0613-001 | I.F.TRANSFORMER | |
| | T 142 | QAX0303-001 | CERAMIC FILTER | |
| | X 121 | QAX0251-001Z | RESONATOR I | |
| | X 191 | QAX0263-001Z | CRYSTAL | |
| | X 192 | QAX0248-001Z | CERA LOCK | |
| | AT 101 | QNB0014-001 | ANT TERMINAL | |
| | BK 001 | E308963-224SM | SHIELD BKT | |
| | CF 101 | QAX0285-001Z | CERAMIC FILTER | |
| | CF 102 | QAX0285-001Z | CERAMIC FILTER | |
| | CN 111 | QGB2510K1-12 | CONNECTOR | |

■Electrical parts list(Tuner P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | CN 112 | QGA2001C1-05 | 5P PLUG ASSY | |
| | FL 141 | QQR0590-001 | LOWPASS FILTER | |
| | FL 142 | QQR0590-001 | LOWPASS FILTER | |
| | RF 101 | QAU0005-001 | FRONT END | |
| | SC 001 | QUB112-07Z4PP | WIRE | |
| | | | | |

# INTEGRATED COMPACT SYSTEM

# ME-EX90



- Contents -

Exploded View of CD Changer Mechanism and Parts List ---------- 4-2
Exploded View of General Assembly and Parts List ---------- 4-4
Exploded View of CD Mechanism and Parts List ---------- 4-7
Exploded View of MD Mechanism and Parts List ---------- 4-8
Electrical Parts List ---------- 4-10
Packing Materials and Accessories List ---------- 4-22

# Removal of Main Parts

■ Removing the Top Cover ( See Fig. 1 )

1. Remove the two screws ① retaining both side of the top cover.
2. Remove the four screws ② retaining the top cover of the rear paneal side.

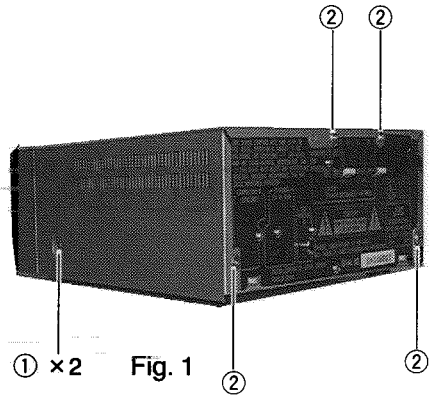



Fig. 1

■ Removing the front panel assembly ( See Fig. 2~3 )

1. Remove the top cover
2. Remove the three screws ③ retaining the front panel assembly of the bottom view side.
3. Disconnect the coard wire CN101.
4. Remove the one screw ④ and the GND wire.

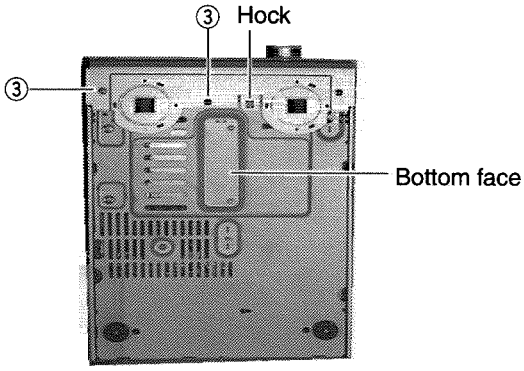



Fig. 2

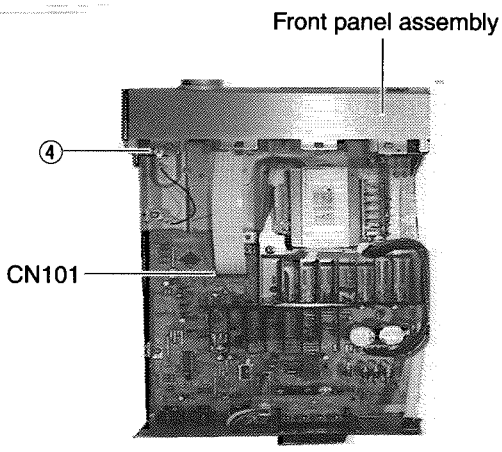



Fig. 3

■ Removing the rear panel assembly (See Fig.4)

1. Remove the top cover
2. Remove the cord stopper to using the pliyer etc.
   Note:At the time,don't scraching on the rear panel.
3. Remove the six screws ⑤ retaining the rear panel assembly.

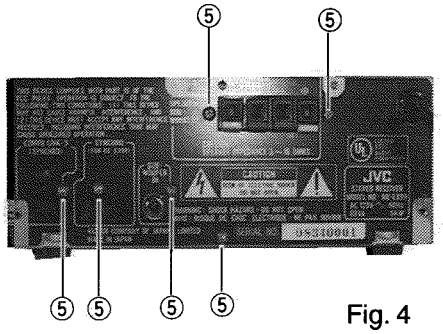



Fig. 4

■ Removing the front cover and indicator board ( See Fig.5 ~6)

1. Remove the top cover and the front panel assembly.
2. Remove the two screws ⑥ retaining the Vol unit board.
3. Remove the four screw ⑦ retaining the indicator board.

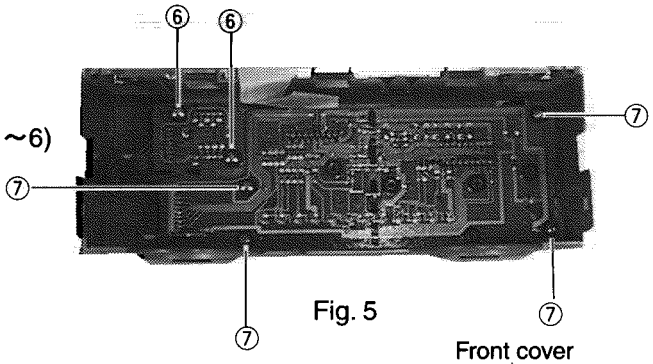



Fig. 5

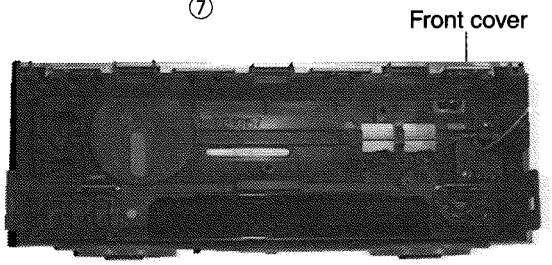



Fig. 6

■ Removing the main board assembly. ( See Fig.7 and 8)

1. Remove the rear panel.
2. Remove the four screws ⑧ retaining the main board assembly.

■ Removing the power transformer (See Fig.7 and 8)

1. Remove the four screws ⑨ retaining the power trans former.

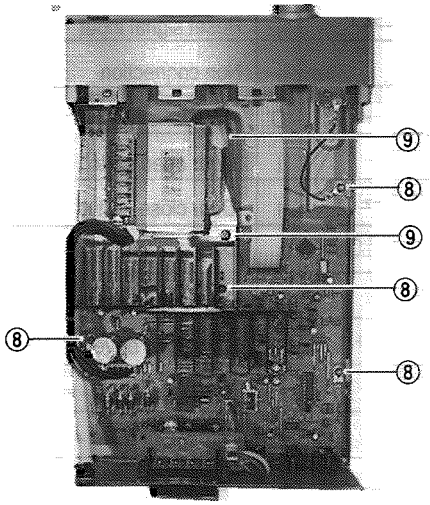



Fig.7

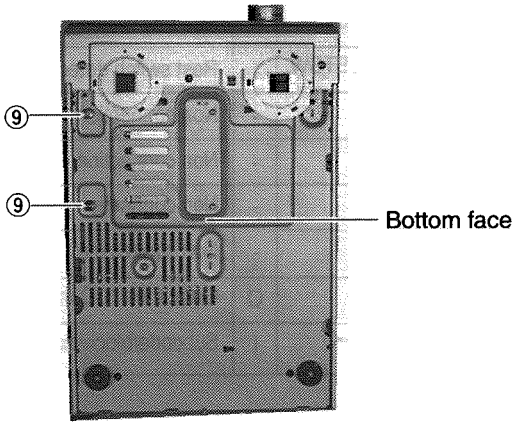
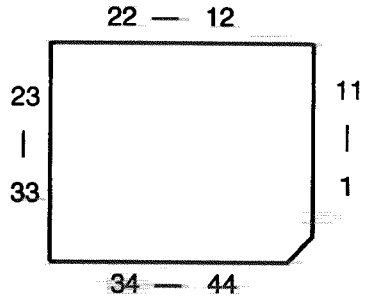



Fig.8

# Description of Min ICs

## ■ MN150837JBR2 (IC681) Changer controller

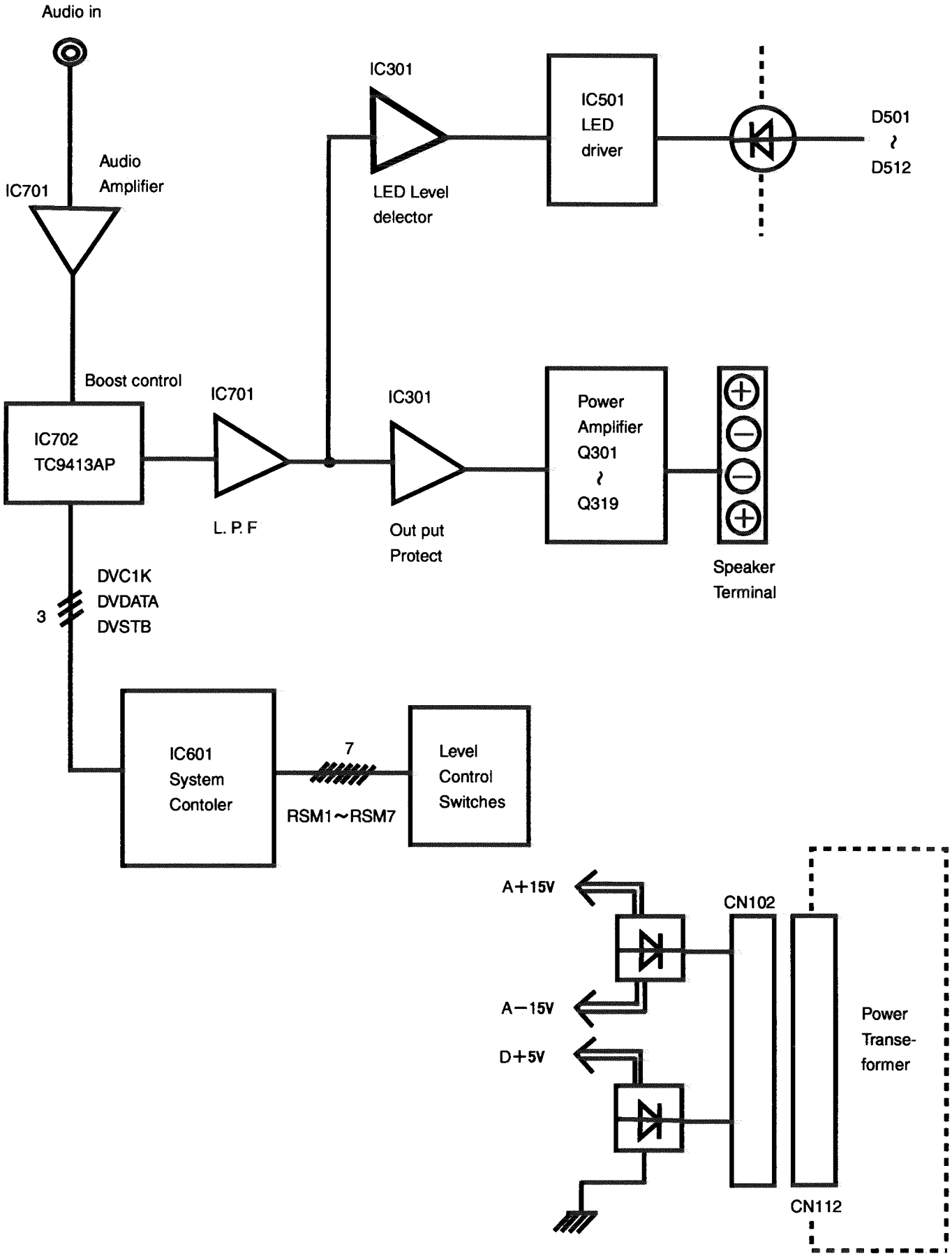
### 1.Terminal Layout




### 2.Description

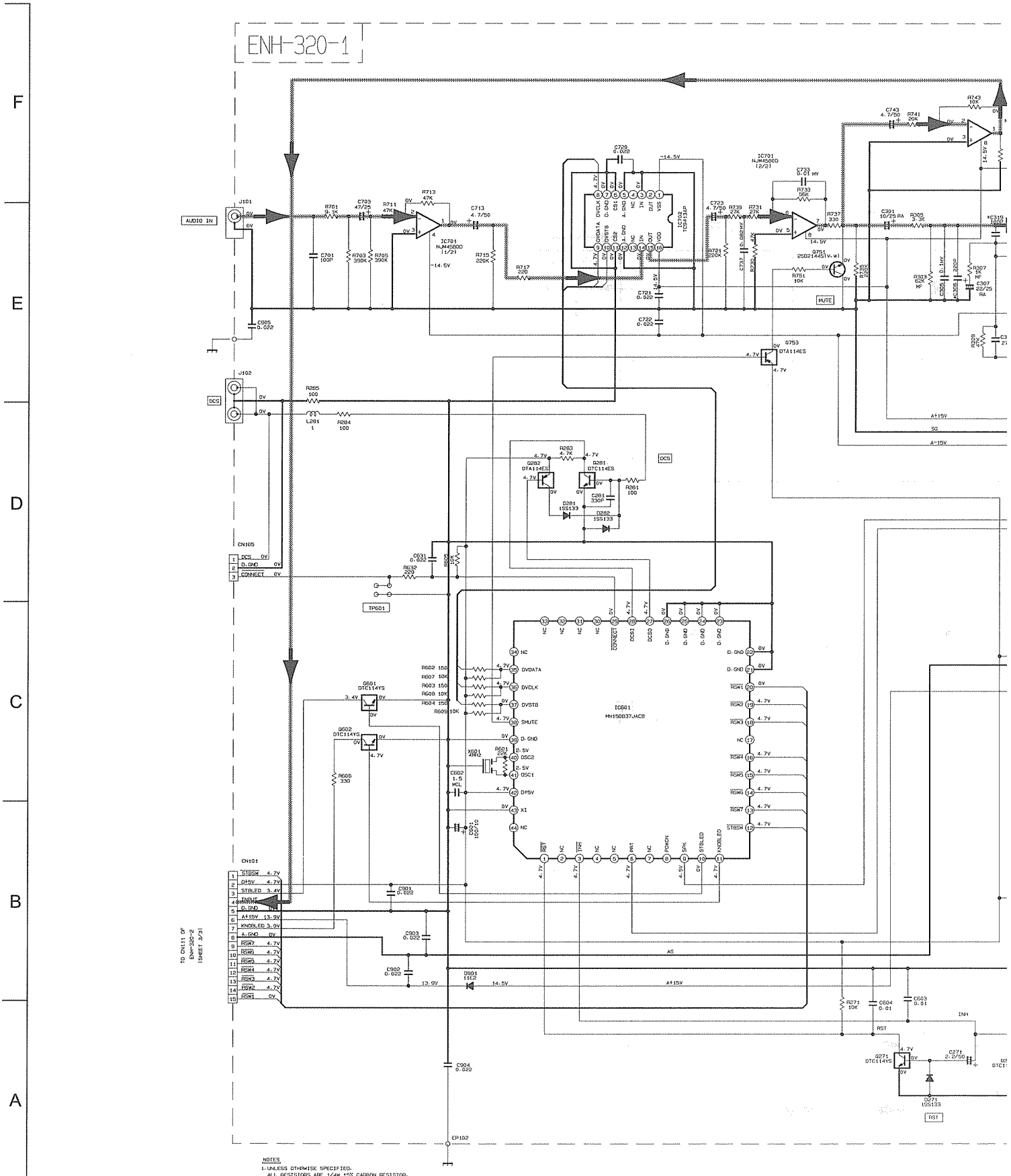
| Pin No. | Symbol | I/O | Description | Pin No. | Symbol | I/O | Description |
|---|---|---|---|---|---|---|---|
| 1 | /RESET | I | Reset signal input | 23 | ST | I | Storobe signal input |
| 2 | NC | - | Non connection | 24 | DATA | I/O | Control/Status data I/ |
| 3 | WATCH5V | O | +5V | 25 | CK | O | Clock signal output |
| 4 | OPEN | I | /Door open switch detect | 26 | STATS | I | STATS signal input |
| 5 | CLOSE | I | /Door close switch detect | 27 | /TLOCK | I | TLOCK signal input |
| 6 | PHOTOSW | I | /Photo switch detect | 28 | /FLOCK | I | FLOCK signal input |
| 7 | NC | - | Non connection | 29 | SENSE | I | SENSE signal input |
| 8 | TRAY+ | O | Tray motor drive + signal output | 30 | NC | - | NC |
| 9 | TRAY- | O | Tray motor drive - signal output | 31 | SQCK | O | Lock signal for sub-code Q resister |
| 10 | CAM+ | O | Cam motor drive + signal output | 32 | MLD | O | Micon command load signal output |
| 11 | CAM- | O | Cam motor drive - signal output | 33 | MDATA | O | Micon command data output |
| 12 | SUBQ | I | Sub-code Q-data output | 34 | MCLK | O | Micon command clock signal input |
| 13 | NC | - | Non connection | 35 | /RST | - | Reset signal output (L:reset) |
| 14 | /INTALSW | I | Initial switch detect | 36 | NC | - | Non connection |
| 15 | /SUBSW | I | Sub tray switch detect | 37 | NC | I | Non connection |
| 16 | /RESETSW | I | Rest switch detect | 38 | /DRIVERMUTE | O | BTL driver mute signal output |
| 17 | NC | - | Non connection | 39 | Vss | - | Connected to GND |
| 18 | NC | - | Non connection | 40 | OSC2 | I/O | Oscillation terminal |
| 19 | NC | - | Non connection | 41 | OSC1 | I/O | Oscillation terminal |
| 20 | NC | - | Non connection | 42 | VDD | - | Power supply |
| 21 | REQ | O | Output the "CD micon data request" | 43 | X1 | - | Connected to GND |
| 22 | BLKCK | I | Subcode/block/clock signal input | 44 | X0 | - | Non connection |

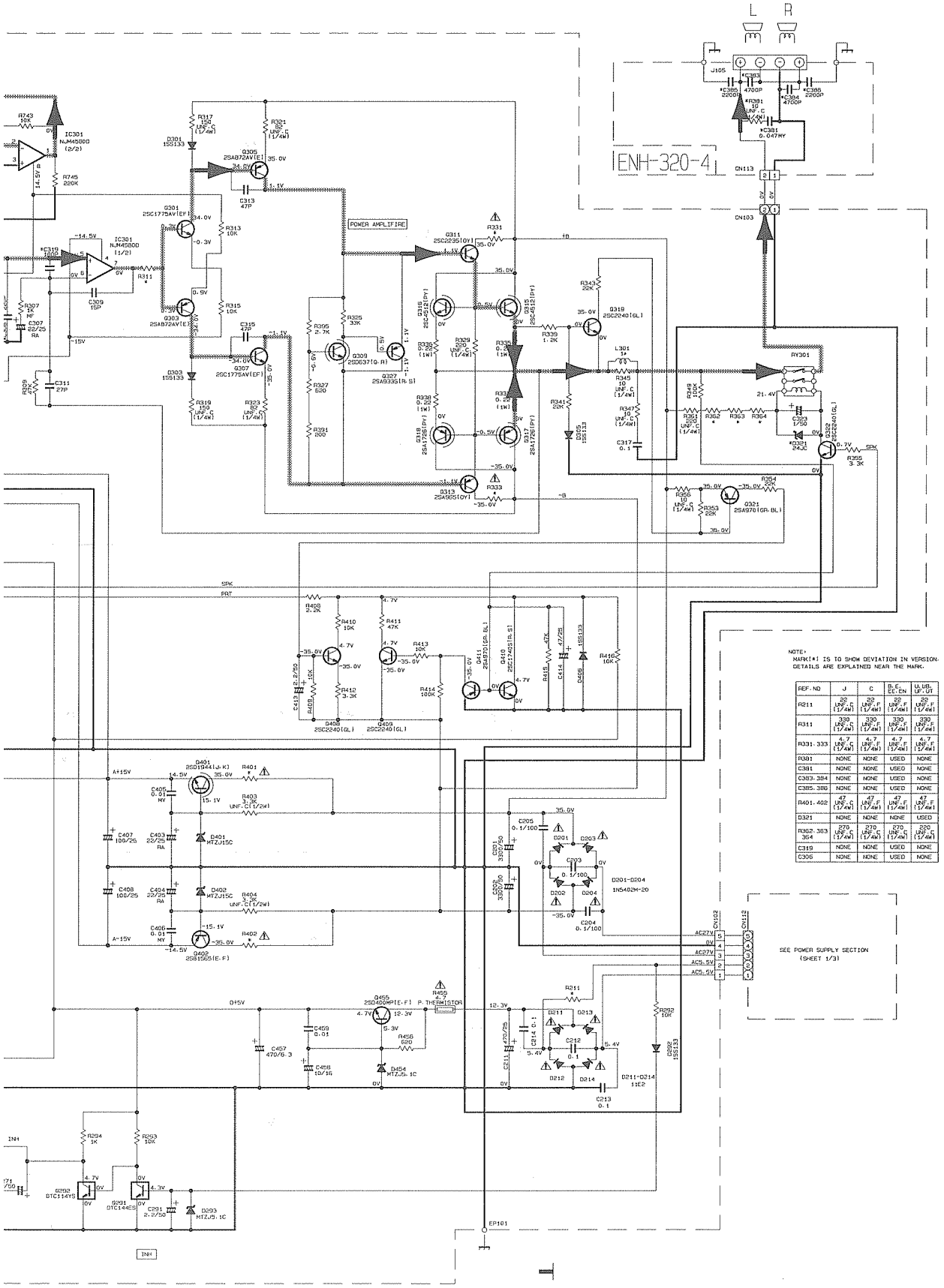
# ME-EX90 Block Diagrams



# Standard Schematic Diagrams

## [ME-EX90] Main Amplifier

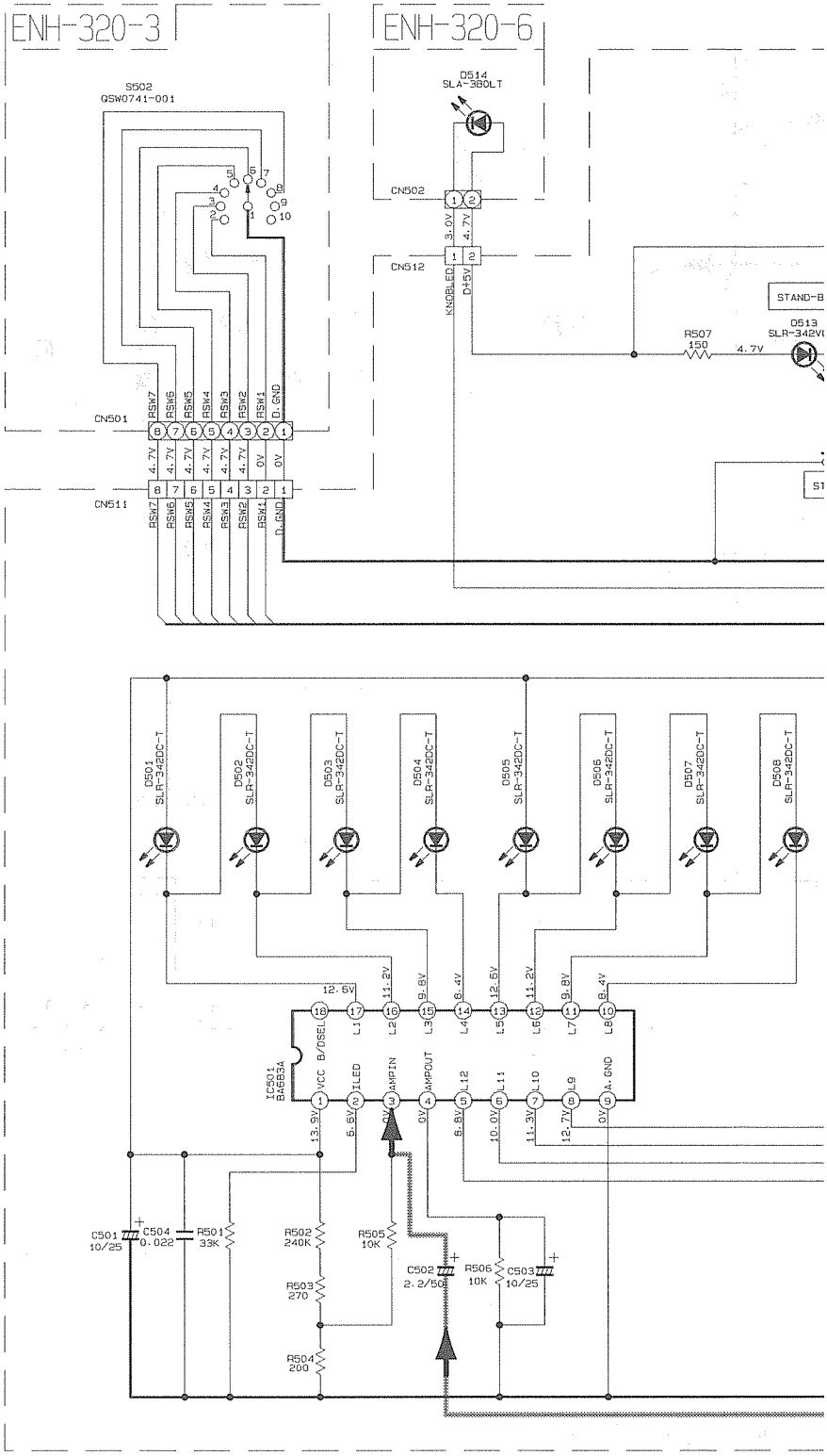




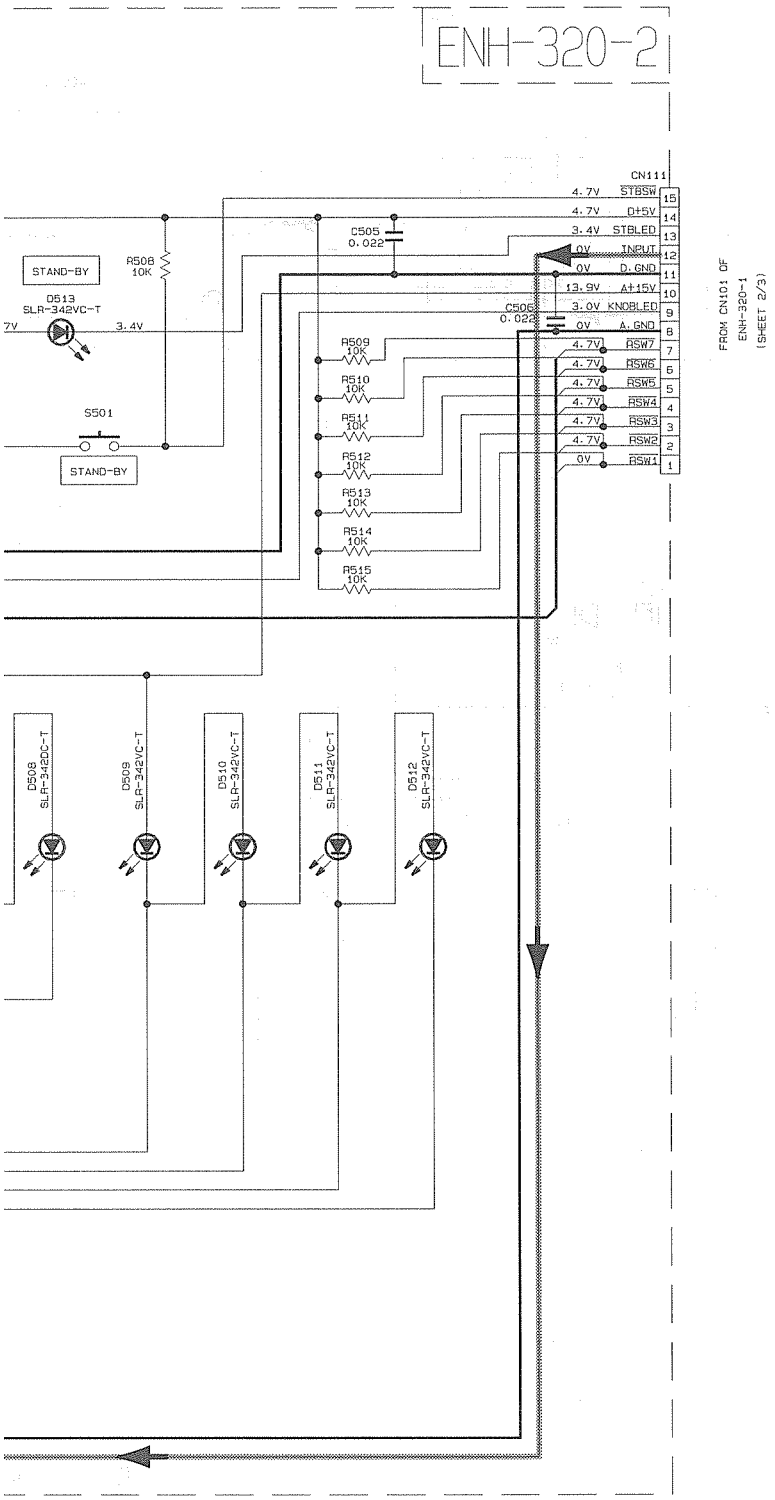

| REF.NO | J | C | B,C EE,EN | U,UB UF,UT |
|---|---|---|---|---|
| R211 | 22 UNF,C (1/4W) | 22 UNF,F (1/4W) | 22 UNF,F (1/4W) | 22 UNF,F (1/4W) |
| R311 | 330 UNF,C (1/4W) | 330 UNF,F (1/4W) | 330 UNF,F (1/4W) | 330 UNF,F (1/4W) |
| R331.333 | 4.7 UNF,C (1/4W) | 4.7 UNF,F (1/4W) | 4.7 UNF,F (1/4W) | 4.7 UNF,F (1/4W) |
| R391 | NONE | NONE | USED | NONE |
| C381 | NONE | NONE | USED | NONE |
| C383.384 | NONE | NONE | USED | NONE |
| C385.386 | NONE | NONE | USED | NONE |
| R401.402 | 47 UNF,C (1/4W) | 47 UNF,F (1/4W) | 47 UNF,F (1/4W) | 47 UNF,F (1/4W) |
| D321 | NONE | NONE | NONE | USED |
| R362.363 364 | 270 UNF,C (1/4W) | 270 UNF,C (1/4W) | 270 UNF,C (1/4W) | 220 UNF,C (1/4W) |
| C319 | NONE | NONE | USED | NONE |
| C306 | NONE | NONE | USED | NONE |

| 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|

## [ME-EX90] LED Driver




NOTES
1. UNLESS OTHRWISE SPECIFIED.
ALL RESISTORS ARE 1/4W ±5% CARBON RESISTOR.




TAPE.PB/MAIN SIGNAL

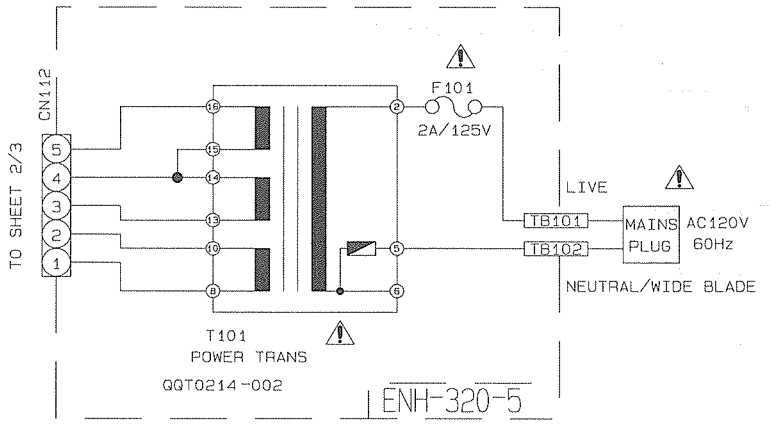
## [ME-EX90] Power Supply

| EXPLANATION OF OVERALL OF SCHEMA |
| --- |
| MODEL ME-EX90 |

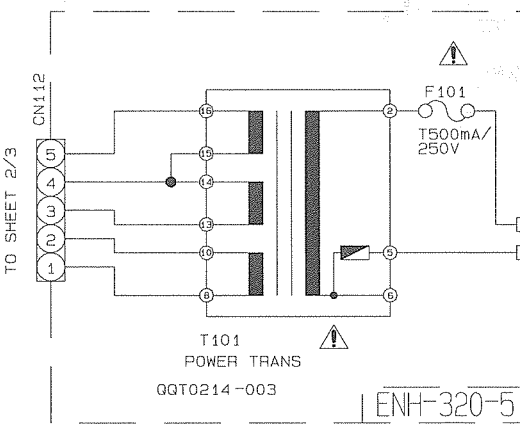
| SHEET NUMBER | CIRCUIT DESCRIPTION |
| --- | --- |
| 1/3 | PRIMARY WITH MAINS TRANSFORMER |
| 2/3 | DC REGULATORS<br>AUDIO AMP<br>SYSTEM CONTROL IC |
| 3/3 | AUDIO LEVEL IND IC<br>LEVEL VOL |

POWER SUPPLY SE

J / C

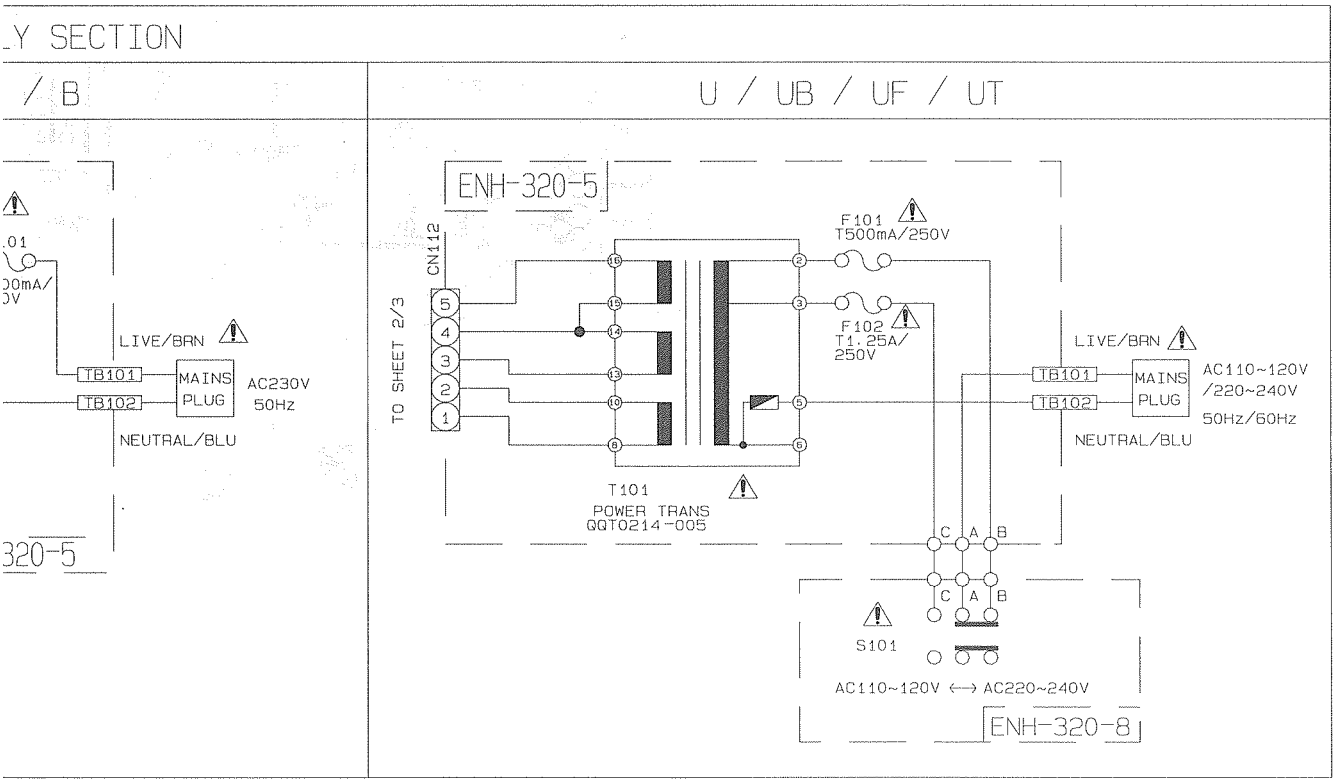



E / EN / EE / B



VERSION CODES

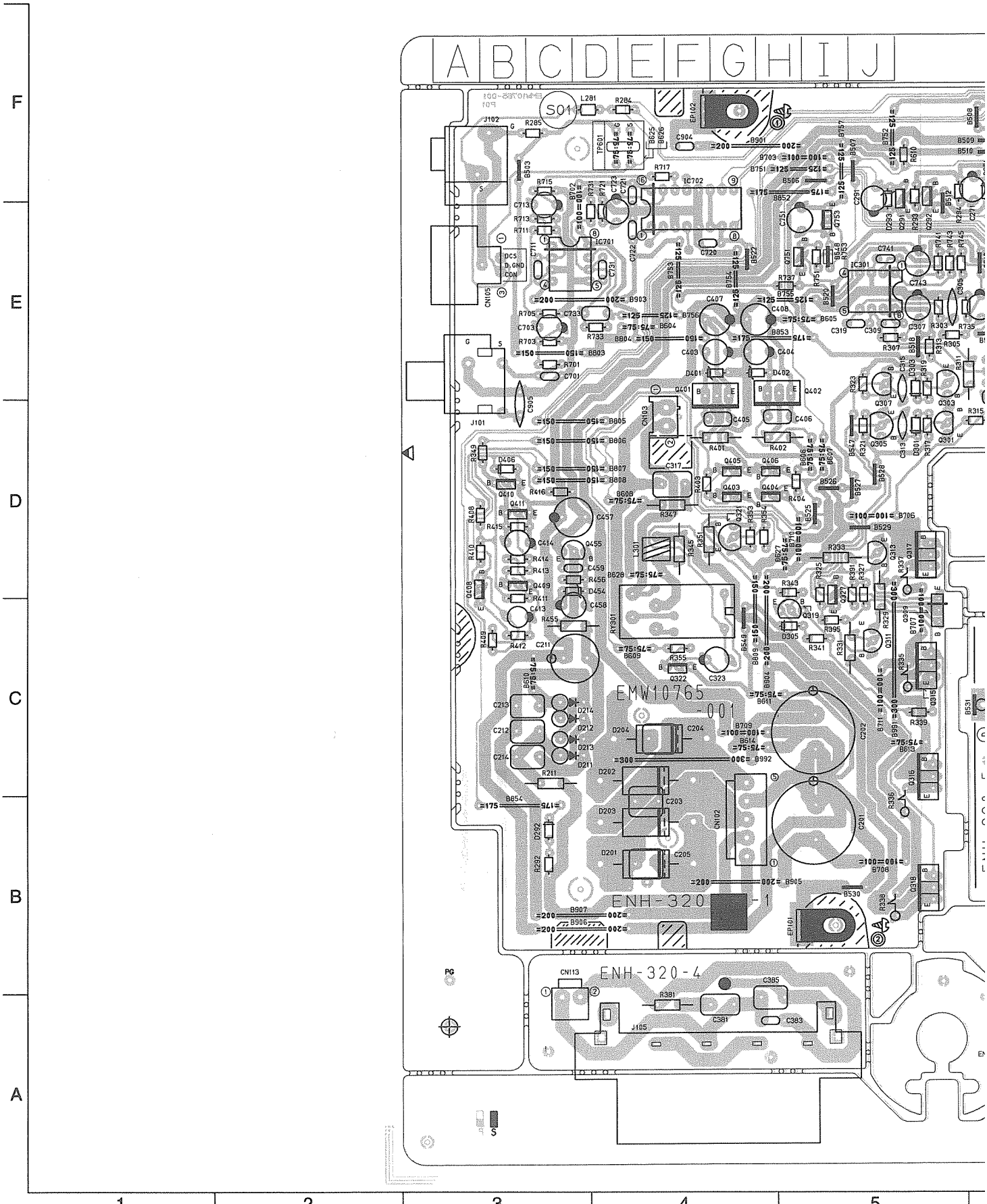
J : U.S.A.
C : CANADA
E : CONTINENTAL EUROPE
EN : NORDIC COUNTRIES
EE : EASTERN EUROPE
B : U.K.
UB : HONGKONG
UF : CHINA
UT : TAIWAN
U : UNIVERSAL EXPECT ALL OF ABOVES



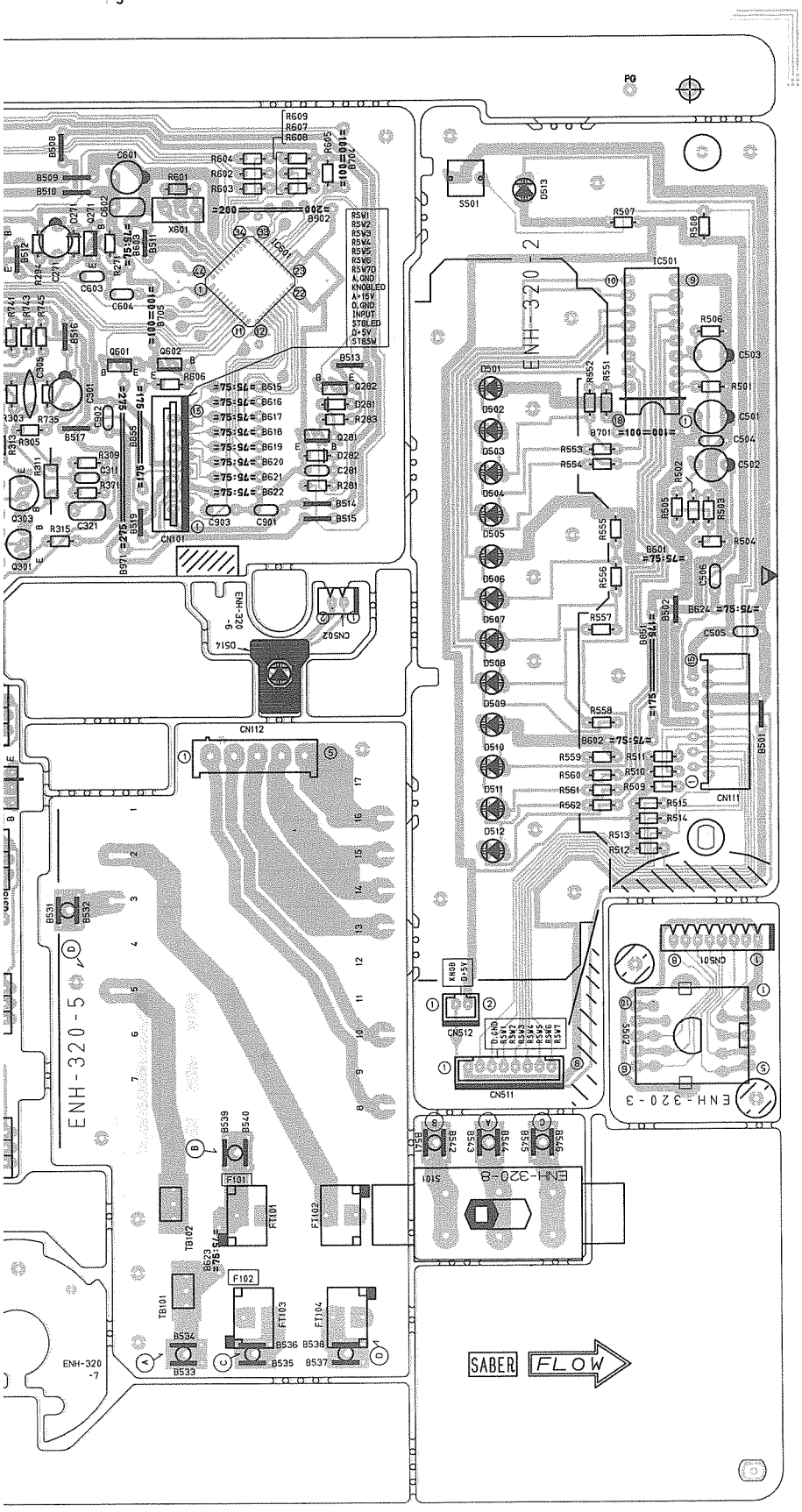
# Location of P.C. Board Parts

**[XL-EX90] CD Section**

表サービス



:サービス


ENH-320-2
ENH-320-5
ENH-320-3
ENH-320-8
ENH-320-6
ENH-320-7
CN101
CN112
CN111
CN511
CN512
CN501
CN502
S501
S101
IC501
SABER
FLOW

# PARTS LIST

## [ ME-EX90 ]

1.Those parts can not to sent as a rule that has not printed or be displayed 「—」 on the parts list.
2. The printed circuit board will be not sent as a rule.
3. ⚠ Parts are safety assurance parts. When replacing those parts, make sure to use to specified one.
4. All printed circuit boards and its assemblies are not available as service parts.

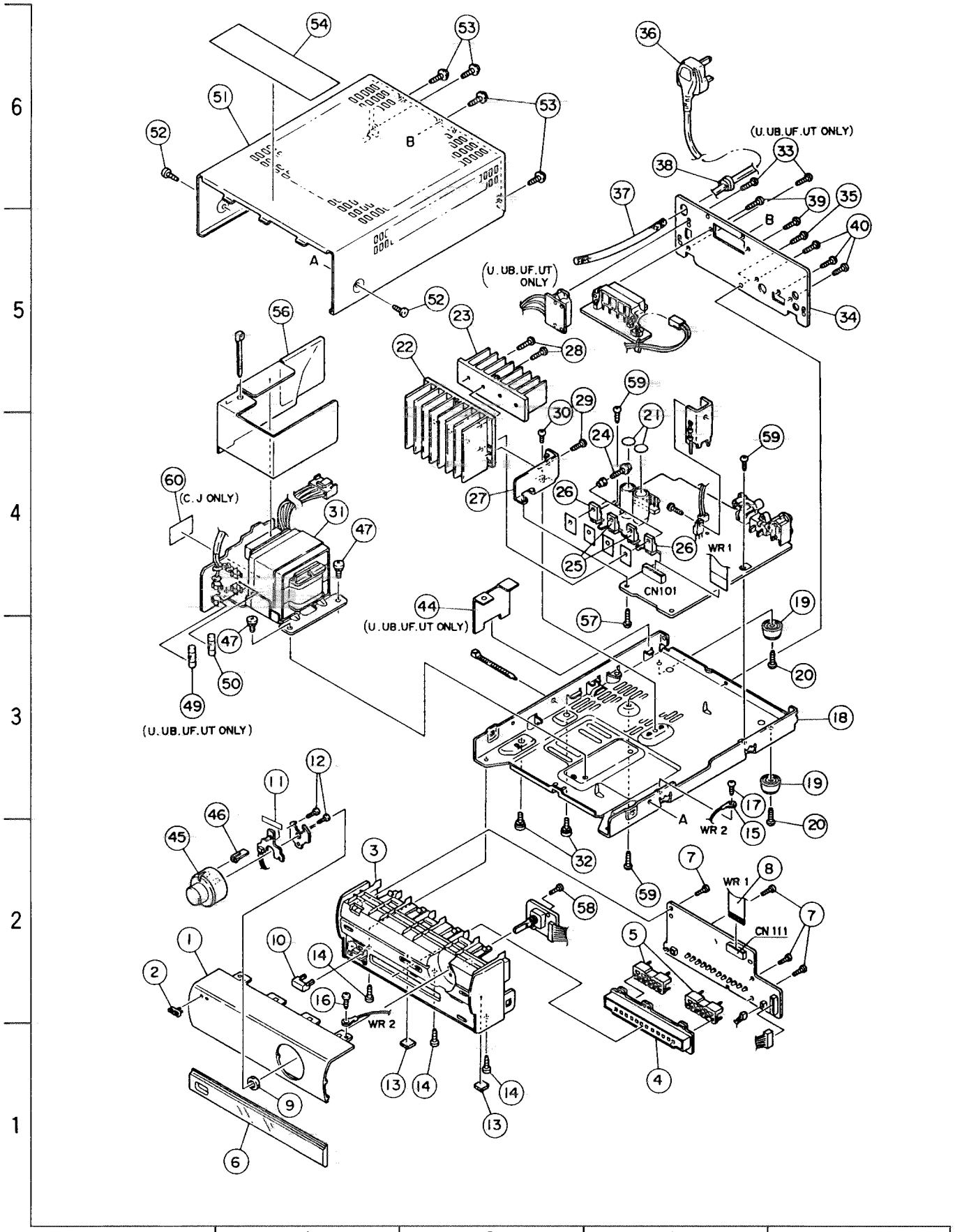
| Area Suffix | |
|---|---|
| C | Canada |
| J | U.S.A. |
| U | Other Areas |
| UB | Hong Kong |
| UF | China |
| US | Singapore |
| UT | Taiwan |
| B | U.K |
| E | Continental Europe |
| EN | Northan Europe |
| EE | Eastern Europe |

- Contents -

General Exploded View and Parts List ---------- 5 - 2
Electrical Parts List---------- 5 - 5
Main P.C.Board---------- 5 - 5

# General Exploded View and Parts List

Block No. M2MM



■Parts List

Block No. M1MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 1 | LV20094-001A | FRONT PANEL | 1 | | |
| | 2 | E406971-001SM | JVC MARK | 1 | | |
| | 3 | LV10058-001A | FRONT BASE | 1 | | |
| | 4 | LV20096-001A | INDICATOR ESCUTCHEON | 1 | | |
| | 5 | LV30363-001A | INDICATOR LENS | 2 | | |
| | 6 | LV30365-001A | WINDOW SCREEN | 1 | | |
| | 7 | QYSDSF2608Z | SCREW | 4 | | |
| | 8 | VWF1215-20TTB | FLAT WIRE | 1 | | |
| | 9 | E71862-003 | VOLUME NUT | 1 | | |
| | 10 | LE30547-001A | POWER CAP | 1 | | CJ |
| | | LE30547-002A | POWER CAP | 1 | | BEEEENUU BUFUSUT |
| | 11 | LV30064-022A | SPACER | 1 | | |
| | 12 | QYSDSF2608Z | SCREW | 2 | | |
| | 13 | E75896-001 | SPACER | 2 | | |
| | 14 | QYSDSG3006E | T.SCREW | 3 | | |
| | 15 | EWT025-003 | TERMINAL WIRE | 1 | | |
| | 16 | QYSDSG3006E | T.SCREW | 1 | | |
| | 17 | QYSBSG3008E | T.SCREW | 1 | | |
| | 18 | LE10158-001A | CHASSIS BASE | 1 | | |
| | 19 | E47227-029 | FOOT | 2 | | |
| | 20 | QYSBSG3008E | T.SCREW | 2 | | |
| | 21 | E75303-003 | SHIELD TAPE | 2 | | J C EXCEPT |
| | 22 | LV30510-003A | HEAT SINK | 1 | | |
| | 23 | LV30511-003A | SUB.HEAT SINK | 1 | | |
| | 24 | E73525-003 | SCREW | 4 | | |
| | 25 | 2SC4512/PY/-F8 | SI.TRANSISTOR | 2 | Q315,Q316 | |
| | 26 | 2SA1726/PY/-F8 | SI.TRANSISTOR | 2 | Q317,Q318 | |
| | 27 | LV30512-001A | HEAT SINK BRACKET | 1 | | |
| | 28 | QYSBSG3008E | T.SCREW | 2 | | |
| | 29 | QYSBSG3008E | T.SCREW | 1 | | |
| | 30 | QYSBST3006E | TAP.SCREW | 1 | | |
| ⚠ | 31 | QQT0214-002 | POWER TRANSFORMER | 1 | T101 | CJ |
| | | QQT0214-003 | POWER TRANSFORMER | 1 | T101 | BEEEEN |
| | | QQT0214-005 | POWER TRANSFORMER | 1 | T101 | UUBUFUSUT |
| | 32 | QYSDSTL4008E | SPECIAL SCREW | 2 | | |
| | 33 | QYSBSG2608M | T.SCREW | 2 | | |
| | 34 | LV20095-003A | REAR PANEL | 1 | | US |
| | | LV20095-009A | REAR PANEL | 1 | | J |
| | | LV20095-010A | REAR PANEL | 1 | | C |
| | | LV20095-011A | REAR PANEL | 1 | | BEEN |
| | | LV20095-012A | REAR PANEL | 1 | | EE |
| | | LV20095-013A | REAR PANEL | 1 | | UUBUF |
| | | LV20095-014A | REAR PANEL | 1 | | UT |
| | 35 | QYSBSGY3008E | SPECIAL SCREW | 1 | | |
| ⚠ | 36 | QMPN100-200-JD | POWER CORD | 1 | | UB |
| | | QMPR100-200-JC | POWER CORD | 1 | | UF |
| | | QMP1D00-200L | POWER CORD | 1 | | CJ |
| | | QMP3900-200 | POWER CORD | 1 | | EEEENUUS |
| | | QMP5530-0085BS | POWER CORD | 1 | | B |
| | | QMP7520-200 | POWER CORD | 1 | | UT |
| | 37 | QXTG709-220 | PROTECTOR TUBE | 1 | | |

■Parts List

Block No. M1MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 38 | QHS3876-162 | CORD STOPPER | 1 | | |
| | 39 | QYSBSGY3008E | SPECIAL SCREW | 2 | | |
| | 40 | QYSBSGY3008E | SPECIAL SCREW | 3 | | |
| | 44 | LV40471-001A | SHIELD COVER | 1 | | UUBUFUT |
| | 45 | LV30364-001A | VOLUME KNOB ASS'Y | 1 | | |
| | 46 | LV30366-001A | INDICATOR | 1 | | |
| | 47 | QYSDSTL4008E | SPECIAL SCREW | 2 | | |
| | 49 | QMF51E2-1R25-J1 | FUSE | 1 | F102 | UUBUFUSUT |
| | 50 | QMF51E2-R50-J1 | FUSE | 1 | F101 | BEEEENUUBUFUSUT |
| | | QMF51U1-2R0-J1 | FUSE | 1 | F101 | CJ |
| | 51 | LE20334-005A | METAL COVER | 1 | | |
| | 52 | QYSDSG3006N | T.SCREW | 2 | | |
| | 53 | QYSBSGG3008E | T.SCREW | 4 | | |
| | 54 | E67000-027 | CAUTION LABEL | 1 | | |
| | 56 | LV30479-001A | SHIELD COVER | 1 | | |
| | 57 | QYSBSG3008E | T.SCREW | 1 | | |
| | 58 | QYSDSF2608Z | SCREW | 1 | | |
| | 59 | QYSBSG3008E | SCREW | 3 | | |
| | 60 | E75803-001 | CAUTION LABEL | 1 | | J |
| | | E75804-001 | J=FUSE C.LABEL | 1 | | C |

■Electrical parts list (Main P.C.Board )

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC301 | NJM4580D | I.C(MONO-ANALOG) | |
| | IC501 | BA683A | I.C(M) | |
| | IC601 | MN150837JACB | I.C. | |
| | IC701 | NJM4580D | I.C(MONO-ANALOG) | |
| | IC702 | TC9413AP | I.C(M) | |
| | | DIODES | | |
| | D201 | 1N5402M-20 | DIODE | |
| | D202 | 1N5402M-20 | DIODE | |
| | D203 | 1N5402M-20 | DIODE | |
| | D204 | 1N5402M-20 | DIODE | |
| | D211 | 11E2-T5 | SILICON | |
| | D212 | 11E2-T5 | SILICON | |
| | D213 | 11E2-T5 | SILICON | |
| | D214 | 11E2-T5 | SILICON | |
| | D271 | 1SS133-T2 | SI.DIODE | |
| | D281 | 1SS133-T2 | SI.DIODE | |
| | D282 | 1SS133-T2 | SI.DIODE | |
| | D292 | 1SS133-T2 | SI.DIODE | |
| | D293 | MTZJ5.1C-T2 | ZENER | |
| | D301 | 1SS133-T2 | SI.DIODE | |
| | D303 | 1SS133-T2 | SI.DIODE | |
| | D305 | 1SS133-T2 | SI.DIODE | |
| | D321 | MTZJ24C-T2 | DIODE | U UB UF US UT |
| | D401 | MTZJ15C-T2 | ZENER | |
| | D402 | MTZJ15C-T2 | ZENER | |
| | D406 | 1SS133-T2 | SI.DIODE | |
| | D454 | MTZJ5.1C-T2 | ZENER | |
| | D501 | SLR-342DC-T | L.E.D. | |
| | D502 | SLR-342DC-T | L.E.D. | |
| | D503 | SLR-342DC-T | L.E.D. | |
| | D504 | SLR-342DC-T | L.E.D. | |
| | D505 | SLR-342DC-T | L.E.D. | |
| | D506 | SLR-342DC-T | L.E.D. | |
| | D507 | SLR-342DC-T | L.E.D. | |
| | D508 | SLR-342DC-T | L.E.D. | |
| | D509 | SLR-342VC-T | L.E.D. | |
| | D510 | SLR-342VC-T | L.E.D. | |
| | D511 | SLR-342VC-T | L.E.D. | |
| | D512 | SLR-342VC-T | L.E.D. | |
| | D513 | SLR-342VC-T | L.E.D. | |
| | D514 | SLA-380LT | L.E.D. | |
| | D901 | 11E2-T5 | SILICON | |
| | | TRANSISTORS | | |
| | Q271 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q281 | DTC114ES | DIGITAL TRANSISTOR | |
| | Q282 | DTA114ES | DIGITAL TRANSISTOR | |
| | Q291 | DTC144ES | DIGITAL TRANSISTOR | |
| | Q292 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q301 | 2SC1775AV/EF/-T | SILICON | |
| | Q303 | 2SA872AV/E/-T | SILICON | |
| | Q305 | 2SA872AV/E/-T | SILICON | |
| | Q307 | 2SC1775AV/EF/-T | SILICON | |
| | Q309 | 2SD637/QR/ | SILICON | |
| | Q311 | 2SC2235/OY/-T | SILICON | |
| | Q313 | 2SA965/OY/-T | SILICON | |
| | Q319 | 2SC2240/GL/-T | SILICON | |
| | Q321 | 2SA970/GL/-T | SILICON | |
| | Q322 | 2SC2240/GL/-T | SILICON | |
| | Q327 | 2SA933S/RS/-T | SILICON | |
| | Q401 | 2SD1944/JK/ | SI.TRANSISTOR | |
| | Q402 | 2SB1565/EF/ | SILICON | |
| | Q408 | 2SC2240/GL/-T | SILICON | |
| | Q409 | 2SC2240/GL/-T | SILICON | |
| | Q410 | 2SC1740S/RS/-T | SI.TRANSISTOR | |
| | Q411 | 2SA970/GL/-T | SILICON | |
| | Q455 | 2SD400MP/EF/-T | SILICON | |
| | Q601 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q602 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q751 | 2SD2144S/VW/-T | SILICON | |
| | Q753 | DTA114ES | DIGITAL TRANSISTOR | |
| | | CAPACITORS | | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | C201 | QTE1H23-338 | E.CAPA. | |
| | C202 | QTE1H23-338 | E.CAPA. | |
| | C203 | QFV72AJ-104 | 0.1MF 100V THIN FILM CAP. | |
| | C204 | QFV72AJ-104 | 0.1MF 100V THIN FILM CAP. | |
| | C205 | QFV82AJ-104 | 0.1MF 100V THIN FILM CAP. | |
| | C211 | QETB1EM-477 | 470MF 25V E.CAP. | |
| | C212 | QFVJ1HJ-104Z | 0.1MF 50V T.FILM | |
| | C213 | QFVJ1HJ-104Z | 0.1MF 50V T.FILM | |
| | C214 | QFVJ1HJ-104Z | 0.1MF 50V T.FILM | |
| | C271 | QETB1HM-225Z | 2.2MF 50V AL E.CAP. | |
| | C281 | QCBB1HK-331Y | 330PF 50V CER.CAP. | |
| | C291 | QETB1HM-225Z | 2.2MF 50V AL E.CAP. | |
| | C301 | QTE1E28-106Z | E.CAPA. I.M | |
| | C305 | QFN31HJ-104Z | 0.1MF 50V MYLAR CAP. | |
| | C306 | QCBB1HK-221Y | CAPACITOR | B E EE EN |
| | C307 | QTE1E28-226Z | AL E.CAP. | |
| | C309 | QCSB1HJ-150Y | 15PF 50V CER.CAP. | |
| | C311 | QCSB1HJ-270Y | 27PF 50V CER.CAP. | |
| | C313 | QCS21HJ-470Z | 47PF 50V CER.CAP. | |
| | C315 | QCS21HJ-470Z | 47PF 50V CER.CAP. | |
| | C317 | QFN31HJ-104Z | 0.1MF 50V MYLAR CAP. | |
| | C319 | QCBB1HK-101Y | CAPACITOR | B E EE EN |
| | C323 | QETB1HM-105Z | 1MF 50V AL E.CAP. | |
| | C381 | QFLB1HJ-473Z | 0.047MF 50V MYLAR CAP. | B E EE EN |
| | C383 | QDXB1CM-472Y | 0.022MF 25V C CAP. | B E EE EN |
| | C384 | QDXB1CM-472Y | CAPACITOR | B E EE EN |
| | C385 | QDXB1CM-222Y | 0.039MF 50V MYLAR CAP. | |
| | C386 | QDXB1CM-222Y | CAPACITOR | B E EE EN |
| | C403 | QTE1E28-226Z | AL E.CAP. | |
| | C404 | QTE1E28-226Z | AL E.CAP. | |
| | C405 | QFN31HJ-103Z | 0.01MF 50V MYLAR CAP. | |
| | C406 | QFN31HJ-103Z | 0.01MF 50V MYLAR CAP. | |
| | C407 | QTE1E28-107Z | E.CAPA. I.M | |
| | C408 | QTE1E28-107Z | E.CAPA. I.M | |
| | C413 | QEKC1HM-225Z | 2.2MF 50V ELECTRO | |
| | C414 | QETB1EM-476Z | 47MF 25V AL E.CAP. | |
| | C457 | QETB0JM-477Z | 470MF 6.3V AL E.CAP. | |
| | C458 | QETC1CM-106Z | 10MF 16V AL E.CAP. | |
| | C459 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C501 | QETB1EM-106Z | 10MF 25V AL E.CAP. | |
| | C502 | QETB1HM-225Z | 2.2MF 50V AL E.CAP. | |
| | C503 | QETB1EM-106Z | 10MF 25V AL E.CAP. | |
| | C504 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C505 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C506 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C601 | QETC1AM-107Z | 100MF 10V E.CAP. | |
| | C602 | QCZ0205-155Z | 1.5MF 25V C.CAP. | |
| | C603 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C604 | QDYB1CM-103Y | 0.01MF 16V C CAP. | |
| | C631 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C701 | QCBB1HK-101Y | 100PF 50V CER.CAP. | |
| | C703 | QETB1EM-476Z | 47MF 25V AL E.CAP. | |
| | C713 | QETB1HM-475Z | 4.7MF 50V E.CAP. | |
| | C720 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C721 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C722 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C723 | QETB1HM-475Z | 4.7MF 50V E.CAP. | |
| | C733 | QFN31HJ-103Z | 0.01MF 50V MYLAR CAP. | |
| | C737 | QFN81HJ-823Z | 0.082MF 50V METAL.MYLAR | |
| | C743 | QETB1HM-475Z | 4.7MF 50V E.CAP. | |
| | C901 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C902 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C903 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C904 | QDVB1EZ-223Y | 0.022MF 25V C CAP. | |
| | C905 | QCF31HZ-223Z | 0.022MF 50V CERAMIC | |
| | | RESISTORS | | |
| | R211 | QRZ9005-220X | RESISTOR | J EXCEPT |
| | | QRJ146J-220X | | J |
| | R271 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R281 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R283 | QRE141J-472Y | 4.7K 1/4W R.NETWORK | |
| | R284 | QRE141J-101Y | 100 1/4W R.NETWORK | |

# CA-EX90/-EX90R

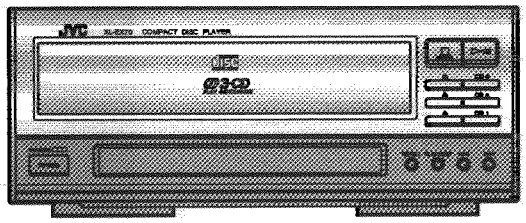
■Electrical parts list (Main P.C.Board )

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R285 | QRE141J-101Y | 100 1/4W R.NETWORK | |
| | R292 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R293 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R294 | QRE141J-102Y | 1K 1/4W R.NETWORK | |
| | R303 | QRA14CF-6202Y | 62K 1/4W R.NETWORK | |
| | R305 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R307 | QRA14CF-1001Y | 1K 1/4W R.NETWORK | |
| | R309 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R311 | QRJ146J-331X | 330 1/4W R.NETWORK | J |
| | | QRZ9005-311X | | J EXCEPT |
| | R313 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R315 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R317 | QRJ146J-151X | 150 1/4W CARBON RES. | |
| | R319 | QRJ146J-151X | 150 1/4W CARBON RES. | |
| | R321 | QRJ146J-820X | 82 1/4W R.NETWORK | |
| | R323 | QRJ146J-820X | 82 1/4W R.NETWORK | |
| | R325 | QRE141J-333Y | 33K 1/4W R.NETWORK | |
| | R327 | QRE141J-621Y | 620 1/4W R.NETWORK | |
| | R329 | QRJ146J-221X | 220 1/4W R.NETWORK | |
| | R331 | QRZ9006-4R7X | RESISTOR | J EXCEPT |
| | | QRJ146J-4R7X | RESISTOR | J |
| | R333 | QRZ9006-4R7X | RESISTOR | J EXCEPT |
| | | QRJ146J-4R7X | RESISTOR | J |
| | R335 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R336 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R337 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R338 | QRT01DJ-R22X | 0.22 1W R.NETWORK | |
| | R339 | QRE141J-122Y | 1.2K 1/4W R.NETWORK | |
| | R341 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R343 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R345 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R347 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R349 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R353 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R354 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R355 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R356 | QRJ146J-100X | 10 1/4W R.NETWORK | |
| | R361 | QRJ146J-221X | 220 1/4W R.NETWORK | |
| | R362 | QRJ146J-221X | 220 1/4W R.NETWORK | U US UT UB UF |
| | | QRJ146J-271Y | | J C B E EE EN |
| | R363 | QRJ146J-221X | 220 1/4W R.NETWORK | U US UT UB UF |
| | | QRJ146J-271Y | | J C B E EE EN |
| | R364 | QRJ146J-221X | 220 1/4W R.NETWORK | U US UT UB UF |
| | | QRJ146J-271Y | | J C B E EE EN |
| | R381 | QRJ146J-100X | 10 1/4W R.NETWORK | B E EE EN |
| | R391 | QRE141J-201Y | 200 1/4W R.NETWORK | |
| | R395 | QRE141J-272Y | 2.7K 1/4W R.NETWORK | |
| | R401 | QRZ9005-470X | RESISTOR | J EXCEPT |
| | | QRJ146J-470X | RESISTOR | J |
| | R402 | QRZ9005-470X | RESISTOR | J EXCEPT |
| | | QRJ146J-470X | RESISTOR | J |
| | R403 | QRK126J-332X | 3.3K 1/2W UNF.CARBON R | |
| | R404 | QRK126J-332X | 3.3K 1/2W UNF.CARBON R | |
| | R408 | QRE141J-222Y | 2.2K 1/4W R.NETWORK | |
| | R409 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R410 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R411 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R412 | QRE141J-332Y | 3.3K 1/4W R.NETWORK | |
| | R413 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R414 | QRE141J-104Y | 100K 1/4W R.NETWORK | |
| | R415 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R416 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R455 | QAD0095-4R7Z | | |
| | R456 | QRE141J-621Y | 620 1/4W R.NETWORK | |
| | R501 | QRE141J-333Y | 33K 1/4W R.NETWORK | |
| | R502 | QRE141J-244Y | 240K 1/4W R.NETWORK | |
| | R503 | QRE141J-271Y | 270 1/4W R.NETWORK | |
| | R504 | QRE141J-201Y | 200 1/4W R.NETWORK | |
| | R505 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R506 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R507 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R508 | QRE141J-103Y | 10K 1/4W CARBON RES. | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R509 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R510 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R511 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R512 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R513 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R514 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R515 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R601 | QRE141J-223Y | 22K 1/4W R.NETWORK | |
| | R602 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R603 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R604 | QRE141J-151Y | 150 1/4W R.NETWORK | |
| | R605 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R606 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R607 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R608 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R609 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R632 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R701 | QRE141J-912Y | 9.1K 1/4W R.NETWORK | |
| | R703 | QRE141J-394Y | 390K 1/4W R.NETWORK | |
| | R705 | QRE141J-394Y | 390K 1/4W R.NETWORK | |
| | R711 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R713 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R715 | QRE141J-224Y | 220K 1/4W R.NETWORK | |
| | R717 | QRE141J-221Y | 220 1/4W R.NETWORK | |
| | R721 | QRE141J-224Y | 220K 1/4W R.NETWORK | |
| | R730 | QRE141J-473Y | 47K 1/4W R.NETWORK | |
| | R731 | QRE141J-273Y | 27K 1/4W R.NETWORK | |
| | R733 | QRE141J-563Y | 56K 1/4W R.NETWORK | |
| | R735 | QRE141J-224Y | 220K 1/4W R.NETWORK | |
| | R737 | QRE141J-331Y | 330 1/4W R.NETWORK | |
| | R739 | QRE141J-273Y | 27K 1/4W R.NETWORK | |
| | R741 | QRE141J-203Y | 20K 1/4W R.NETWORK | |
| | R743 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | R745 | QRE141J-224Y | 220K 1/4W R.NETWORK | |
| | R751 | QRE141J-103Y | 10K 1/4W CARBON RES. | |
| | | OTHERS | | |
| | | EMW10765-003 | PRINTED BOARD | |
| | | QYSBSG3008E | T.SCREW | |
| | J101 | QNN0284-001 | PIN JACK | |
| | J102 | QNS0016-001 | 3.5 JACK | |
| | J105 | QNB0085-001 | SPEAKER TERMINAL | |
| | L281 | QQL231K-1R0Y | INDUCTOR I.M | |
| | L301 | QQLZ005-R45 | INDUCTOR | |
| | S101 | QSW0513-001 | SLIDE SW. | U UB UF US UT |
| | S501 | QSW0499-001Z | PUSH SW I.M | |
| | S502 | QSW0741-001 | ROTARY SWITCH | |
| | X601 | QAX0248-001Z | CERA LOCK | |
| | CN101 | QGF1205C1-15 | CONNECTOR | |
| | CN102 | QGA3901C1-05 | CONNECTOR | |
| | CN103 | EWS282-011 | SOCKET WIRE | |
| | CN105 | EMV7127-003 | CONNECT TERMINAL | |
| | CN111 | QGF1205F1-15 | CONNECTOR | |
| | CN112 | EWS285-005 | SOCKET WIRE | |
| | CN113 | QGA3901C1-02 | CONNECTOR | |
| | CN501 | EWS268-F210 | SOCKET WIRE | |
| | CN502 | EWS262-F220 | SOCKET WIRE | |
| | CN511 | QGA2001C1-08 | 8P PLUG ASSY | |
| | CN512 | QGA2001C1-02 | PLUG ASSY | |
| | EP101 | QNZ0136-001Z | IM EARTH PLATE | |
| | EP102 | QNZ0136-001Z | IM EARTH PLATE | |
| | FT101 | QNG0020-001Z | FUSE CLIP | |
| | FT102 | QNG0020-001Z | FUSE CLIP | |
| | FT103 | QNG0020-001Z | FUSE CLIP | U UB UF US UT |
| | HS401 | E70306-001 | HEAT SINK | |
| | RY301 | QSK0042-001 | RELAY | |
| | SP601 | VYH7237-001 | I.C.COVER | |
| | TB101 | QNZ0079-001Z | TAB I.M | |
| | TB102 | QNZ0079-001Z | TAB I.M | |
| | FL101 | E67132-TR50 | FUSE LABEL | J C EXCEPT |
| | FL102 | E67132-T1R25 | FUSE LABEL | U UB UF US UT |

# INTEGRATED COMPACT SYSTEM

# XL-EX90



- Contents -

Exploded View of CD Changer Mechanism and Parts List ---------- 6-2
Exploded View of General Assembly and Parts List ---------- 6-4
Exploded View of CD Mechanism and Parts List ---------- 6-7
Exploded View of MD Mechanism and Parts List ---------- 6-8
Electrical Parts List ---------- 6-10
Packing Materials and Accessories List ---------- 6-22

# Removal of Main Patrts

**(1) Removing the top cover**

1. Remove the two screws A retaining both sides of the top cover and the four screws G retaining the rear side.
2. While raising the rear section and spreading the top cover, pull out the cover from the front panel.

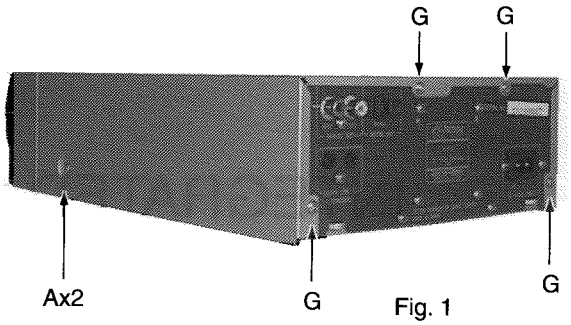


Fig. 1

**(2) Removing the front panel assembly**

1. Remove the top cover.
2. From the bottom face side, remove the three screws B retaining the front panel assembly.
3. By removing the screw C, disconnect the earth wire.
4. Pull out the card wire (CN802) connected to the out put P.C. board.
5. By removing the three hooks, disassemble the front panel assembly.

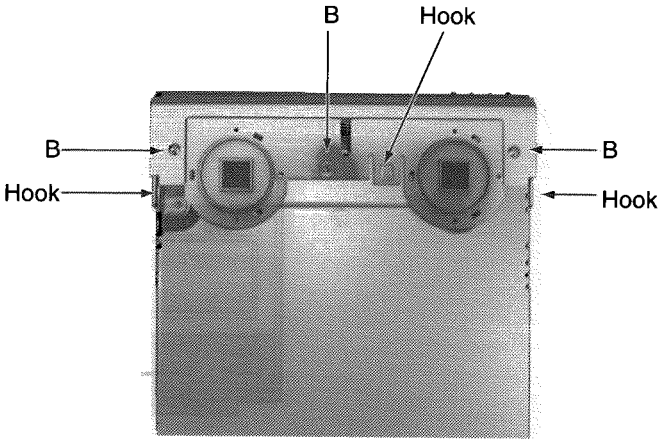


Fig. 2

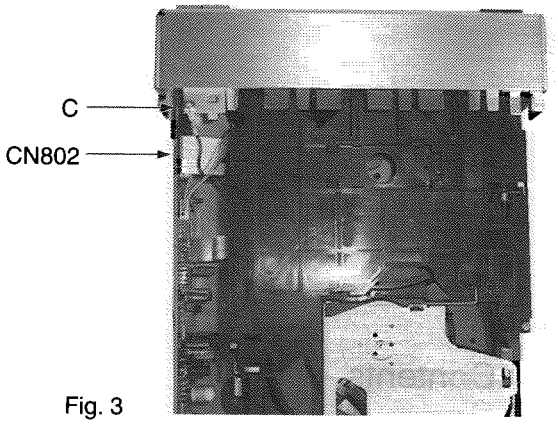


Fig. 3

**(3) Removing the rear panel**

1. Remove the top cover.
2. Remove the eleven screws H retaining the rear panel.
3. Remove the internal power transformer from the two hooks.

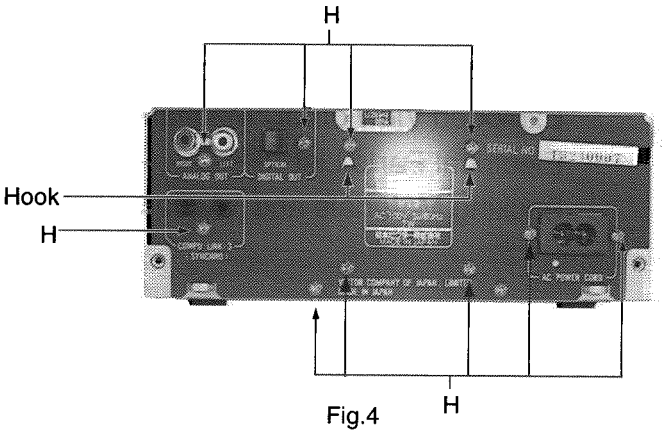


Fig.4

**(4) Removing the front cover and system control P.C. board**

1. Disassemble the front panel assembly.
2. By removing the four screws D retaining the system control P.C. board, remove this P.C. board.
3. After removing the hook A, remove the two hooks B.

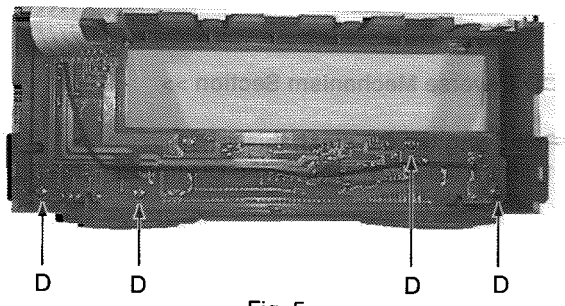



Fig. 5

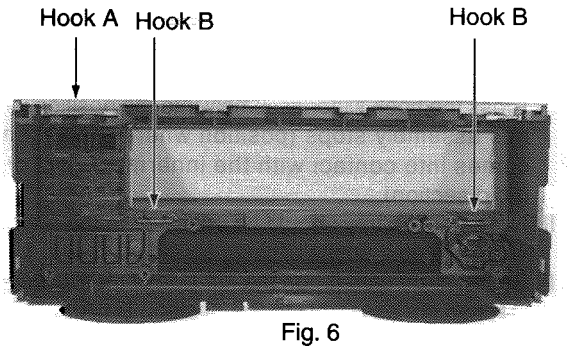



Fig. 6

**(5) Removing the output P.C. board**

1. Remove the top cover and rear panel.
2. Remove the two screws E retaining the output P.C. board.
3. Pull out the card wires (CN805 and CN804) and connector (CN803).
4. After disconnecting the flat wire (CN806) and connector (CN801), remove the power transformer as necessary.

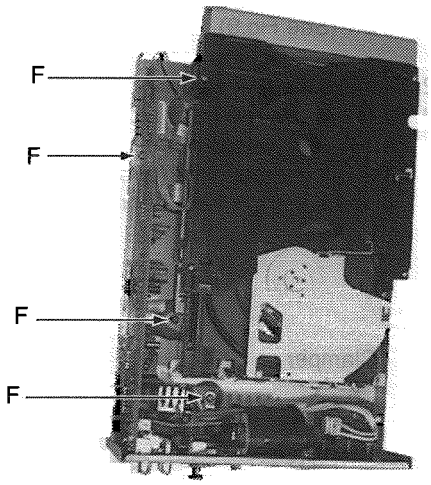



Fig. 7

**(6) Removing the CD mechanism assembly**

Remove the fourscrews F retaining the CD mechanism assembly.

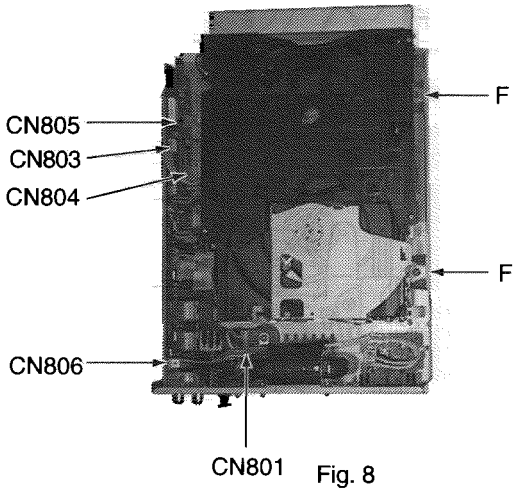



Fig. 8

**<< CD Traverse Mechanism Section >>**

■ **Removing the CD mechanism**

1. From the body, remove the CD traverse mechanism assembly.

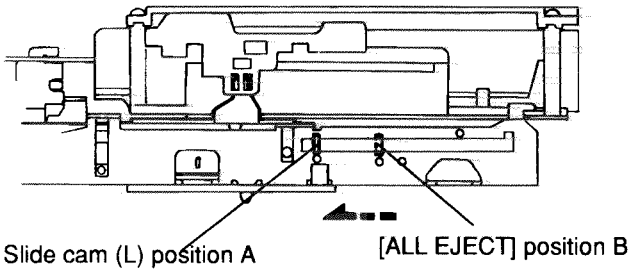
CAUTION: When this mechanism has been removed from the body (wherein all of the sub trays will be housed in the main tray), either of the three sub trays will be set to a playing condition. Therefore, set the corresponding sub tray to the waiting position according to the following steps:

I. Press the hook slider assembly into the position where this assembly stops (position where the assembly comes into contact with the innermost part of the mold section).

II. Next, the sub tray should be enclosed in the main tray while sliding it until a clinking sound is issued.

III. Set the slide cam (L) on the left side of the CD traverse mechanism assembly to the position B ([ALL EJECT] position. Under this condition, the CD traverse mechaism will be kept as it has been hanged down (See Fig.9).

2. Remove the four screws 1 retaining the top cover.
3. Remove the rod from a clamper, and take it out to gether with the top cover.
4. Take out the main tray (under the conditions where all of the sub trays have been enclosed).



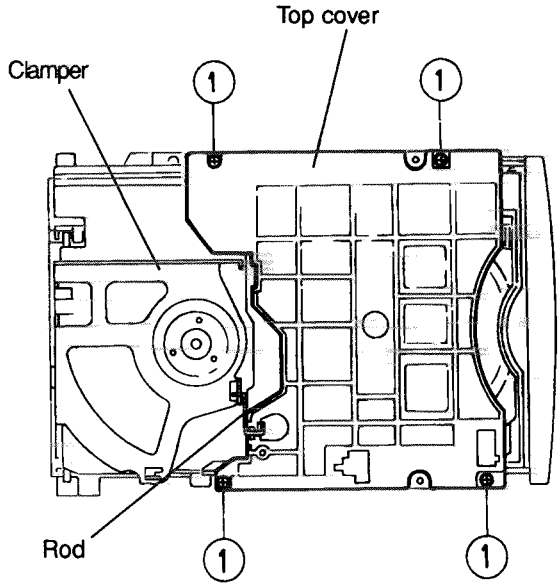




Fig. 10

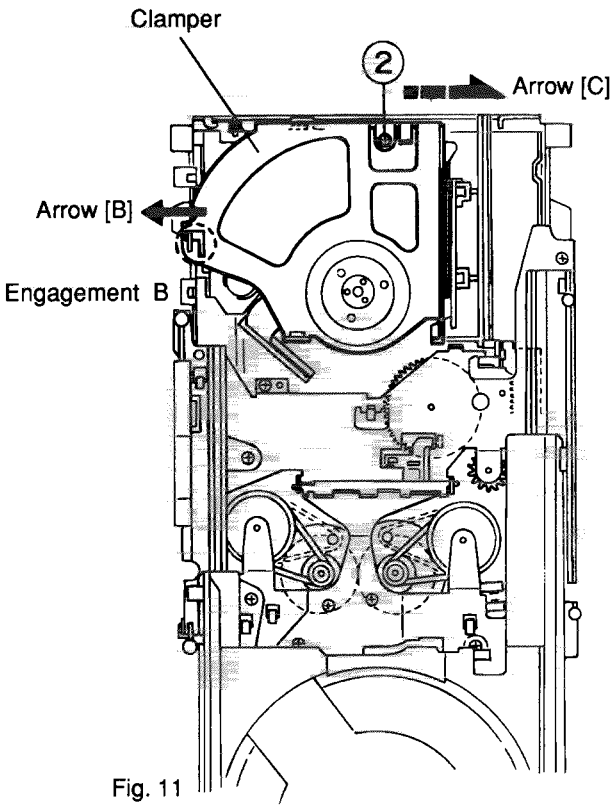
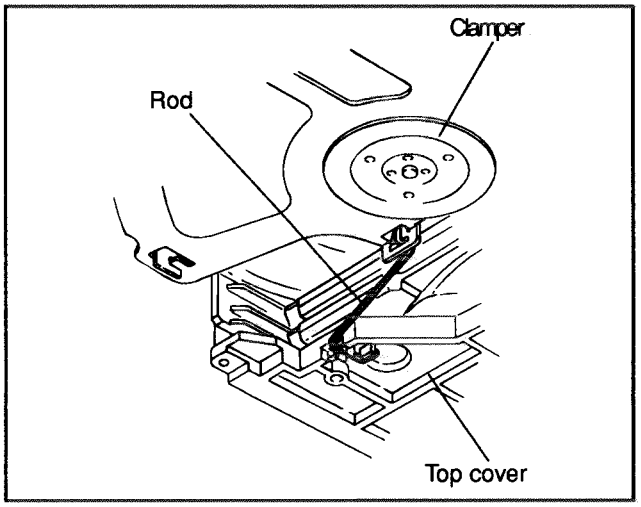



Fig. 11



5. Slide the slide cam (L) to the position A.
6. Remove the two screws 2 retaining the clamper.
7. While moving the clamper in the arrow direction [B] and shifting it in the arrow direction [C], disengage the clamper from the engagement section B.

8. Take out the stopper retaining the CD mechanism while moving the moving the center pawl in the arrow direction [D] as shown in Fig. 12.
9. Take out the three insulators from the CD mechanism by using tweezers.
10. Solder the flexible P.C. board outgoing from the CD mechanism as shown in Fig. 13.
11. Remove the flexible P.C. board from the connector CN601 on the CD traverse mechanism control and servo P.C. board.

CAUTION: Since the connection between the flexible P.C. board and CN601 will not be easily disconected, remove this P.C. board by wrapping cloth, etc. around cutting pliers in order not to cause any damage to the P.C. board.

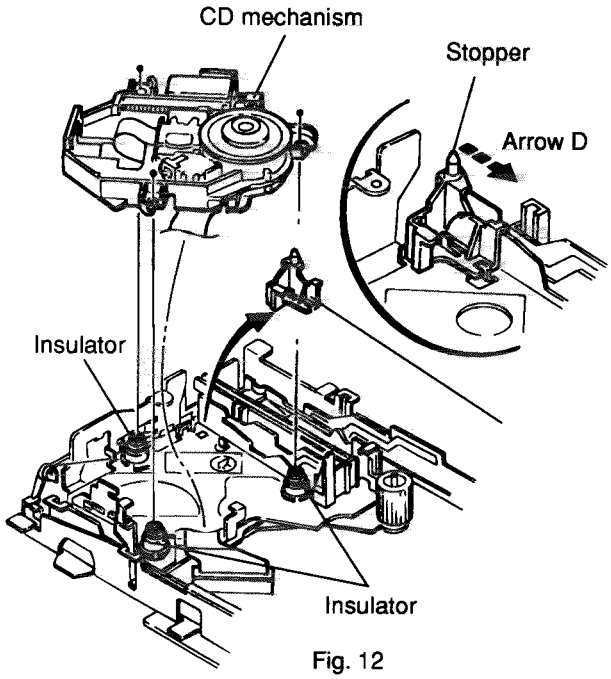



Fig. 12

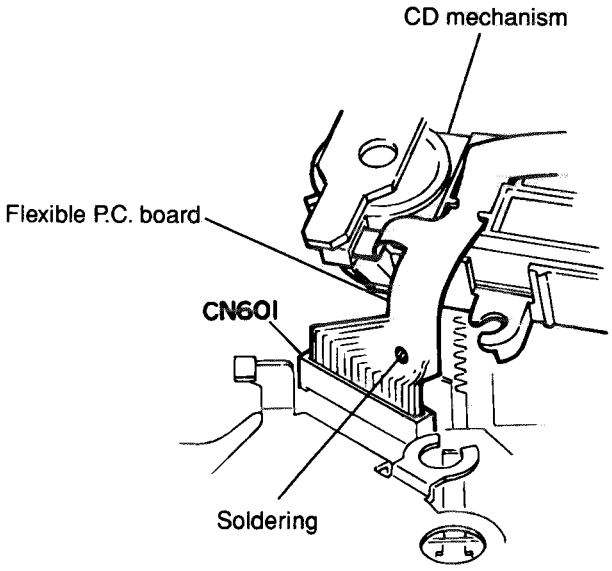



Fig. 13

■ **Procedures for Reassembling the CD Mechanism**

1. In principle, reassemble the CD mechanism according to the opposite order of removing this mechanism. Be sure to remove any soldering formed in Step 9 of the removing method mentioned above.
2. Be sure to mount the stopper and clamper retaining the CD mechanism under the conditions where the CD mecha-nism has been hanged down.
3. Mount the top cover after aligning the slide cam to the position E.

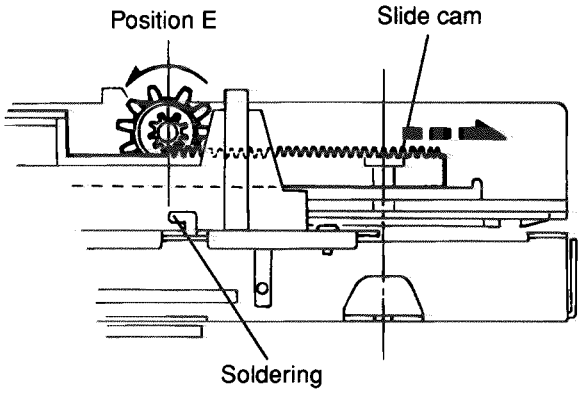



Fig. 14

■ **Removing the CD tray**

1. Remove the top cover.
2. Take out the CD tray.
3. Remove the two screws 3 retaining the CD tray guide (L)unit.
4. Disengage the two engagements D retaining the tray guide (L) unit while moving the unit in the arrow direc tion [E].
5. After pulling out the engagement E from the mecha- nism chassis, remove this chassis together with the CD tray.

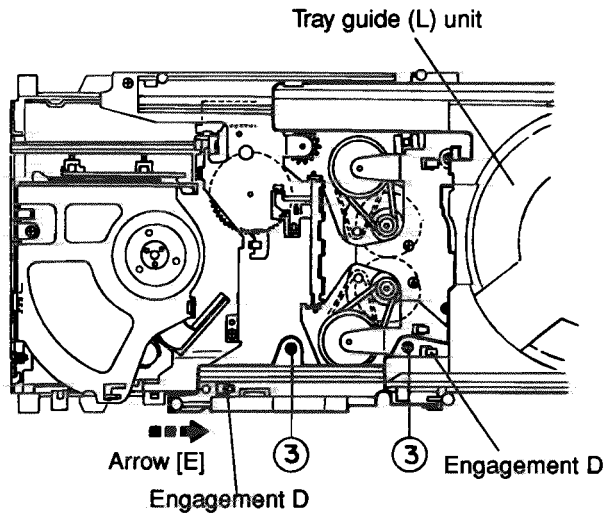



Fig. 15

■ **Removing the CD traverse mechanism control & servo P.C.board**

1. Remove the top cover.
2. Take out the CD tray.
3. Hang the two belts hanged on the tray & cam drive motor again to the motor as shown in Fig. 17.
4. Remove the two screws 4 retaining the tray & cam drive motor.

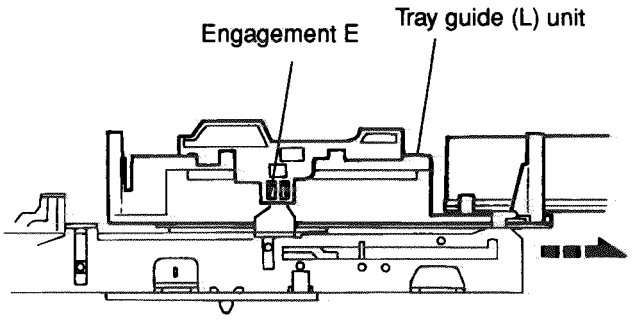



Fig. 16

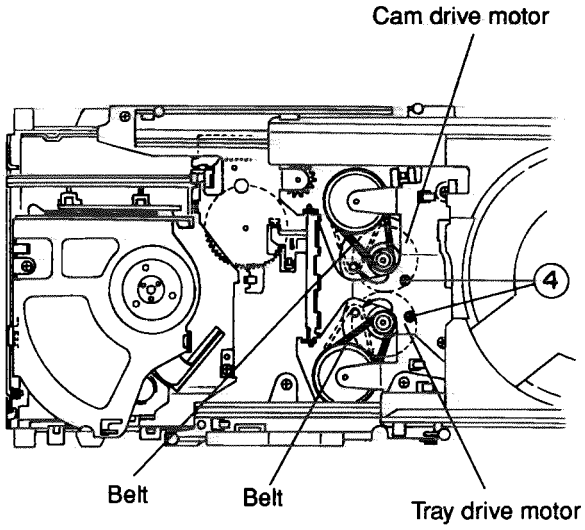



Fig. 17

5. After turning over the CD traverse mechanism, remove the four screws 5 retaining the CD traverse mecha nism control & servo P.C. board.
6. While keeping the P.C. board afloat, solder the position on the flexible P.C. board outgoing from the CD pickup unit.
7. After turning the CD traverse mechanism back to the normal position, remove the flexible P.C. board from the connector CN601 on the CD traverse mechanism con trol & servo P.C. board.
8. Remove the CD traverse mechanism control & servo P.C. board.

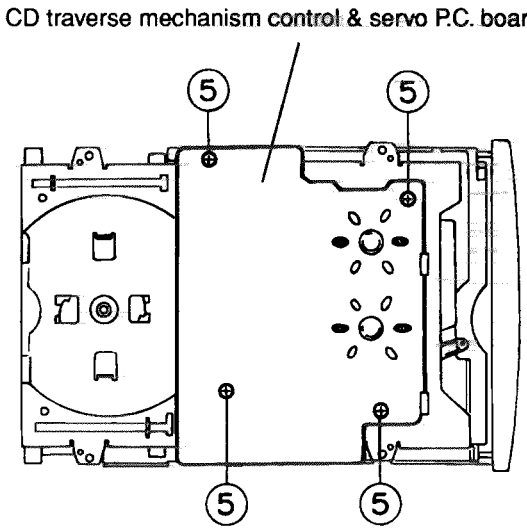



Fig. 18

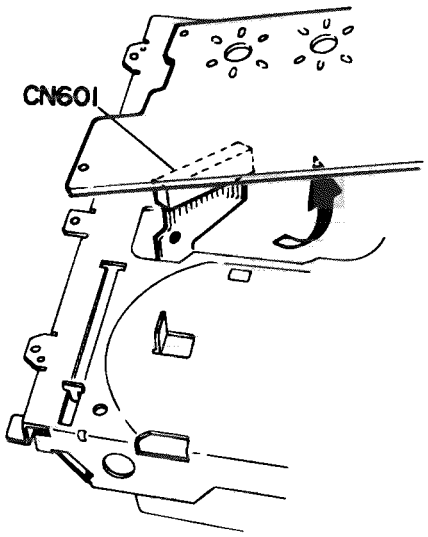



Fig. 19

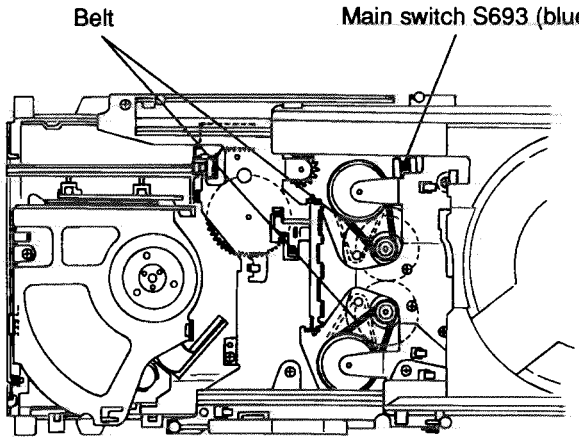



Fig. 20

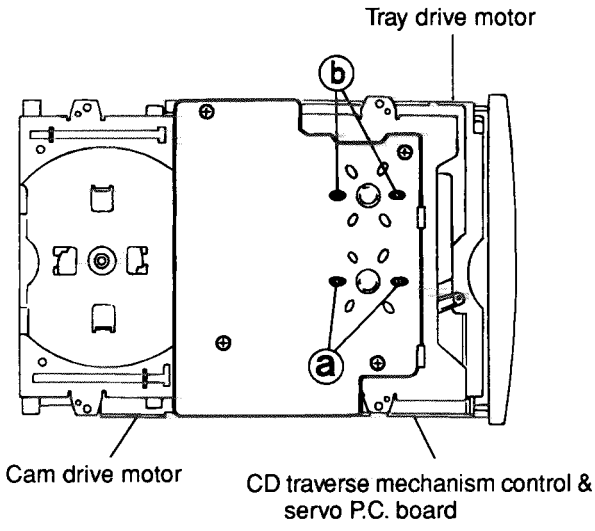



Fig. 21

■ **Removing the CD pickup uni**

1. Remove the top cover.
2. Remove the clamper
3. Remove the CD mechanism.
4. Shift the CD pickup unit in the arrow direction.
5. Remove the one screw 6 retaining the shaft holder.
6. Remove the two screws 7 retaining the rack arm, and dismount the S.S. gear assembly.
7. Solder the position on the flexible P.C. board on the back of the CD pickup unit.
8. Remove the flexible P.C. board from the connector on the back of the CD pickup unit.

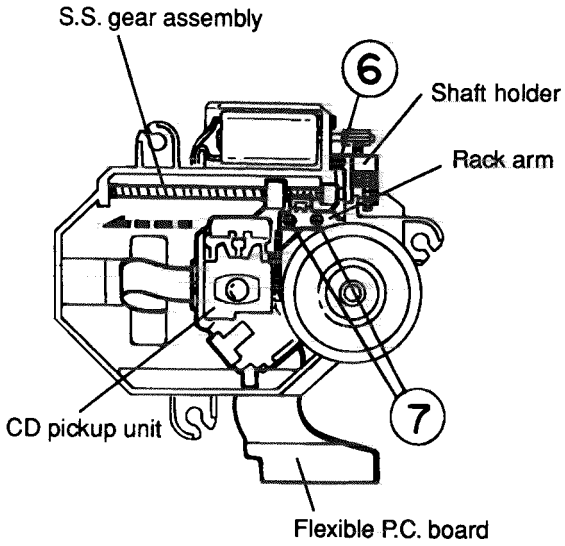



Fig. 22

■ **Procedures for Reassembling the CD Pickup Unit**

In principle, the CD pickup unit should be reassembled according to the opposite steps of removing the unit.
Caution: When mounting the rack arm, the round head screws should be tightened at first.

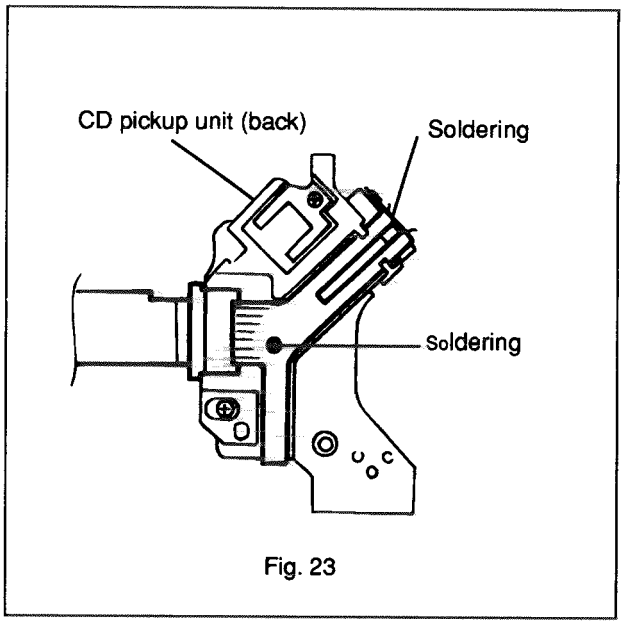



Fig. 23

■ **Removing the feed motor assembly**

1. Remove the top cover.
2. Remove the clamper.
3. Remove the CD mechanism.
4. Remove the one screw 8 retaining the feed motor assebly.

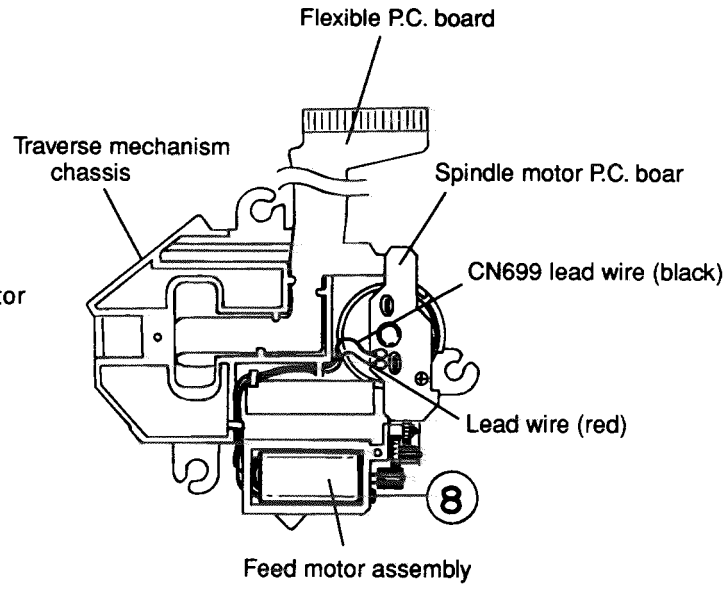



Fig. 24

5. After turning over the CD mechanism, remove this mechanism from the lead wire treating groove of the feed motor assembly.
6. Remove the soldered positions of the lead wires (red and black) from the spindle motor P.C. board.

■ **Removing the traverse mechanism chassis assembly**

1. Remove the top cover.
2. Remove the clamper
3. Remove the CD mechanism.
4. Remove the CD pickup unit.
5. Pull the middle gear.
6. Dismount the feed motor.
7. After turning over the CD mechanism, remove the two soldered portions C on the spindle motor P.C. board.
8. From the connector CN699 on the spindle motor P.C. board, remove the flexible P.C. board and separate it from the traverse mechanism chassis assembly.
9. The spindle motor and turntable will not be supplied individually for changing the parts. Therefore, change the spindle motor and turntable in the form of the traverse mechanism chassis assembly (combination of spindle motor, turntable and mechanism chassis).

CAUTION: Since the LOCK-TIGHT 460 is used at thpress-fit section of turntable and spindle motor shaft , the spindle motor will sometimes be broken when the shaft has been dismounted carelessly.

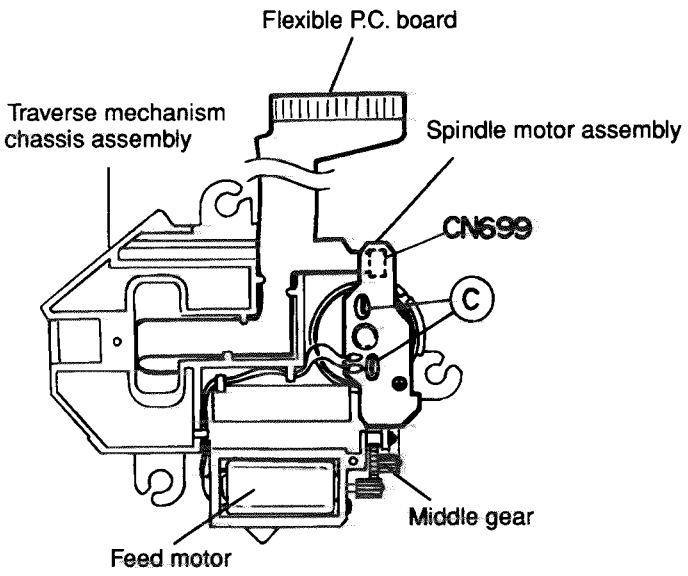



Fig. 25

■ **Removing the actuator unit**

1. Remove the top cover.
2. Dismount the tray guide (R) together with the CD tray.
3. Remove the four screws 9 retaining the actuator unit.
4. Remove the two screws 10 retaining the tray & cam drive motor.

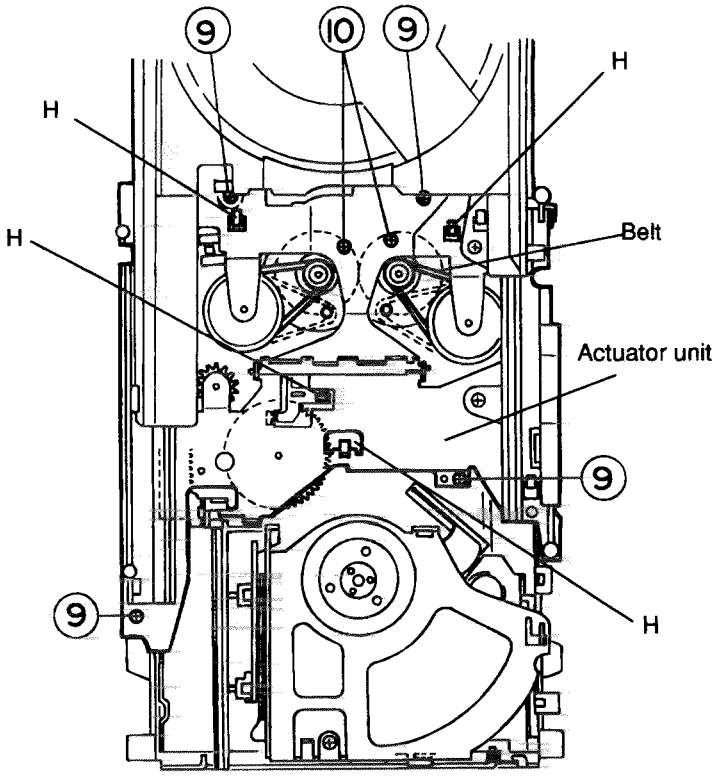



Fig. 26

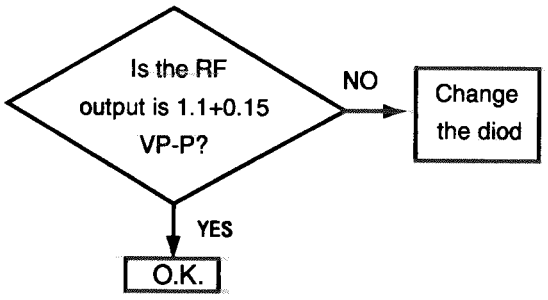
**Maintenance of CD Pickup**

**(1) Cleaning of pickup lens**

1. Prior to changing any pickup lens,be sure to clean the pickup lens.
2. For cleaning the pickup lens, use the following cotton swab immerse in alcohol: Product No. JCB-B4 Manufacturer: Nippon Cotton Web

**(2) Check of the service life of laserdiode When** the service life of laserdiode has been exhausted, the following symptoms will appear:

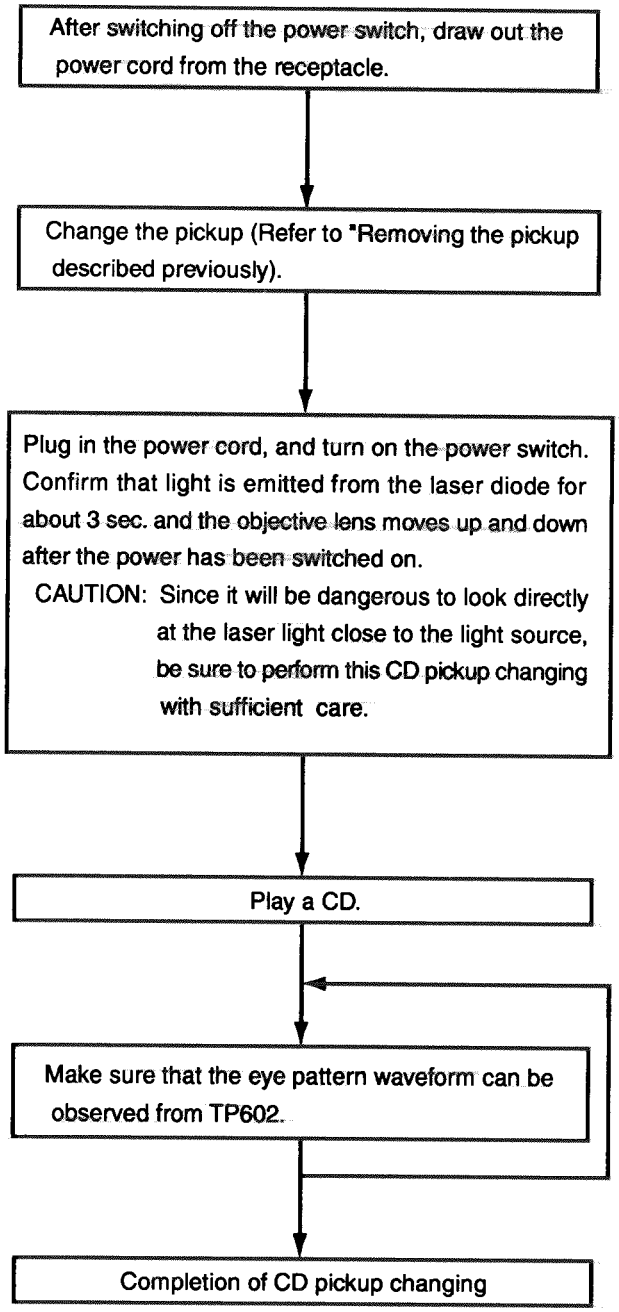
1. The RF output from TP602 (EFM outputand eye pattern amplitude) will be decreased.
2. The drive current necessary for light emission from the laser diode will be increased.Therefore, check the service life of the laser diode according to the following flow chart:



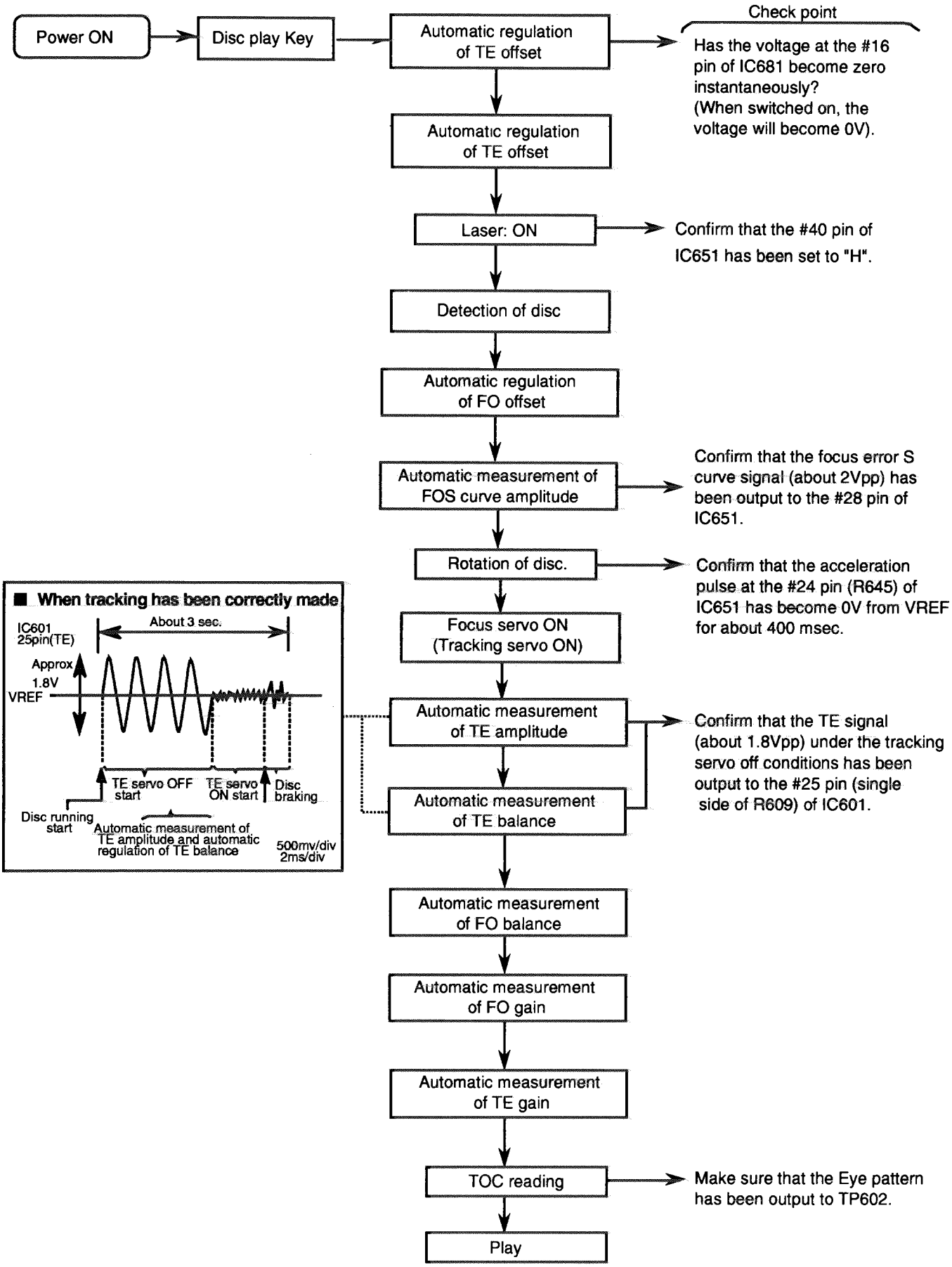

**(3) Semi-fixed resistor on the APC P.C. board**

The semi-fixed resistors attached to the pickup on the APC P.C. board is designed for adjusting the laser power.Since these resistors should be adjusted in a pair according to the characteristics of the laser block, be sure not to touch on any of the resistors. If the laser power is too low,the service life of the laser diode will be exhausted.In such a case, change the pickup.
Should any normal semi-fixed resistor of pickup be turned, the pickup can possibly bebroken due to overcurrent.Therefore, be sure not to turn such a semi-fixed resistor.

**Procedures for Changing the CD Pickup**


After switching off the power switch, draw out the power cord from the receptacle.
Change the pickup (Refer to "Removing the pickup described previously).
Plug in the power cord, and turn on the power switch. Confirm that light is emitted from the laser diode for about 3 sec. and the objective lens moves up and down after the power has been switched on.
CAUTION: Since it will be dangerous to look directly at the laser light close to the light source, be sure to perform this CD pickup changing with sufficient care.
Play a CD.
Make sure that the eye pattern waveform can be observed from TP602.
Completion of CD pickup changing

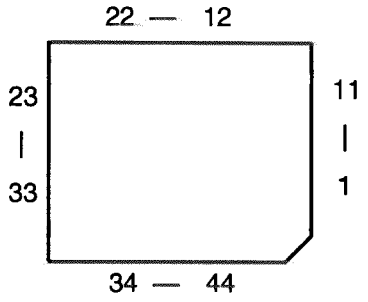
**General Flow until Reading TOC**


Power ON
Disc play Key
Automatic regulation of TE offset
Check point
Has the voltage at the #16 pin of IC681 become zero instantaneously? (When switched on, the voltage will become 0V).
Automatic regulation of TE offset
Laser: ON
Confirm that the #40 pin of IC651 has been set to "H".
Detection of disc
Automatic regulation of FO offset
Automatic measurement of FOS curve amplitude
Confirm that the focus error S curve signal (about 2Vpp) has been output to the #28 pin of IC651.
Rotation of disc.
Confirm that the acceleration pulse at the #24 pin (R645) of IC651 has become 0V from VREF for about 400 msec.
Focus servo ON (Tracking servo ON)
Automatic measurement of TE amplitude
Confirm that the TE signal (about 1.8Vpp) under the tracking servo off conditions has been output to the #25 pin (single side of R609) of IC601.
Automatic measurement of TE balance
Automatic measurement of FO balance
Automatic measurement of FO gain
Automatic measurement of TE gain
TOC reading
Make sure that the Eye pattern has been output to TP602.
Play
■ When tracking has been correctly made
IC601 25pin(TE)
About 3 sec.
Approx 1.8V
VREF
TE servo OFF start
TE servo ON start
Disc braking
Disc running start
Automatic measurement of TE amplitude and automatic regulation of TE balance
500mv/div
2ms/div

# Description of Main ICs

■ MN150837JBR2 (IC681) Changer controller

1.Terminal Layout




2.Description

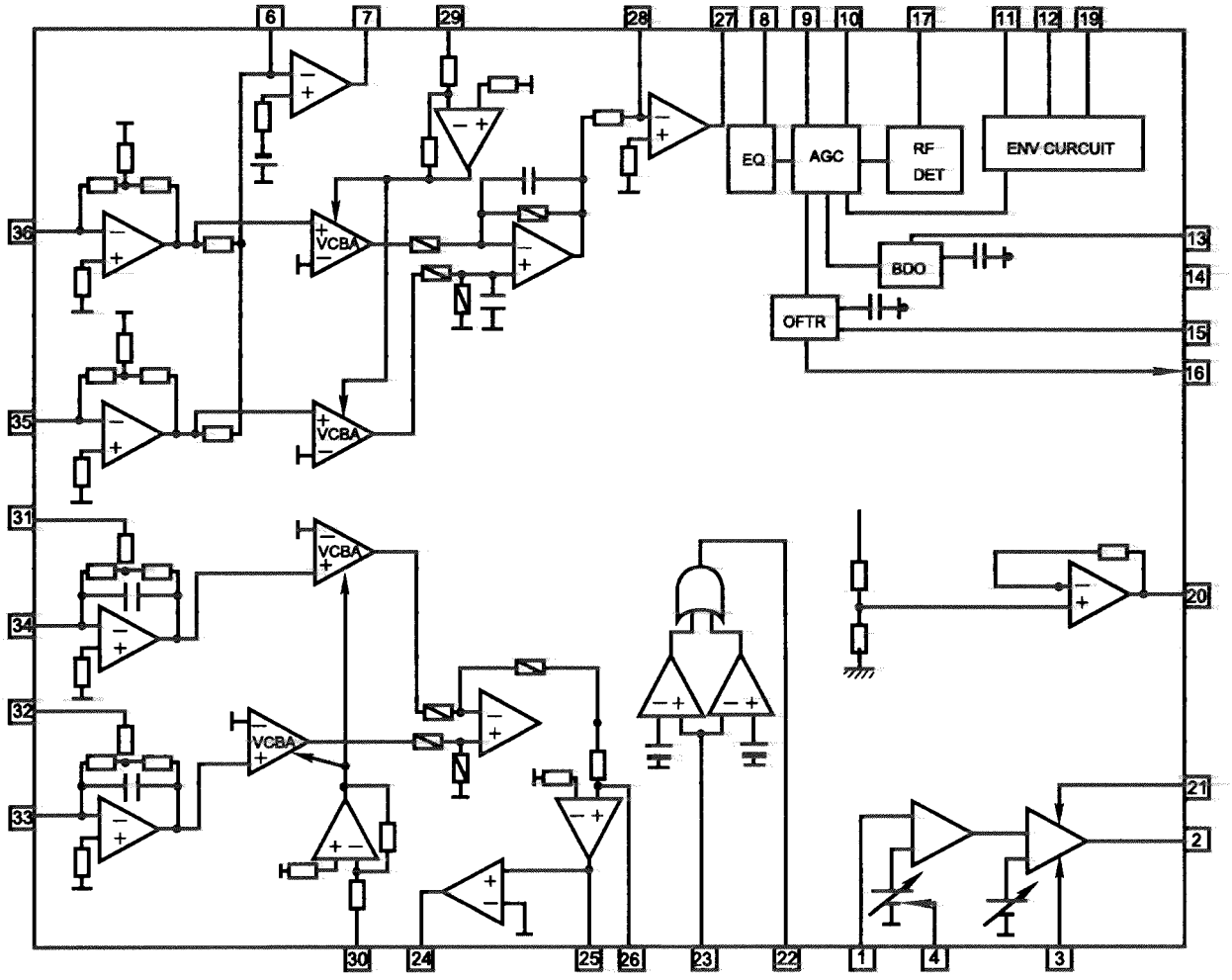
| Pin No. | Symbol | I/O | Description | Pin No. | Symbol | I/O | Description |
|---|---|---|---|---|---|---|---|
| 1 | /RESET | I | Reset signal input | 23 | ST | I | Storobe signal input |
| 2 | NC | - | Non connection | 24 | DATA | I/O | Control/Status data I/ |
| 3 | WATCH5V | O | +5V | 25 | CK | O | Clock signal output |
| 4 | OPEN | I | /Door open switch detect | 26 | STATS | I | STATS signal input |
| 5 | CLOSE | I | /Door close switch detect | 27 | /TLOCK | I | TLOCK signal input |
| 6 | PHOTOSW | I | /Photo switch detect | 28 | /FLOCK | I | FLOCK signal input |
| 7 | NC | - | Non connection | 29 | SENSE | I | SENSE signal input |
| 8 | TRAY+ | O | Tray motor drive + signal output | 30 | NC | - | NC |
| 9 | TRAY- | O | Tray motor drive - signal output | 31 | SQCK | O | Lock signal for sub-code Q resister |
| 10 | CAM+ | O | Cam motor drive + signal output | 32 | MLD | O | Micon command load signal output |
| 11 | CAM- | O | Cam motor drive - signal output | 33 | MDATA | O | Micon command data output |
| 12 | SUBQ | I | Sub-code Q-data output | 34 | MCLK | O | Micon command clock signal input |
| 13 | NC | - | Non connection | 35 | /RST | - | Reset signal output (L:reset) |
| 14 | /INTALSW | I | Initial switch detect | 36 | NC | - | Non connection |
| 15 | /SUBSW | I | Sub tray switch detect | 37 | NC | I | Non connection |
| 16 | /RESETSW | I | Rest switch detect | 38 | /DRIVERMUTE | O | BTL driver mute signal output |
| 17 | NC | - | Non connection | 39 | Vss | - | Connected to GND |
| 18 | NC | - | Non connection | 40 | OSC2 | I/O | Oscillation terminal |
| 19 | NC | - | Non connection | 41 | OSC1 | I/O | Oscillation terminal |
| 20 | NC | - | Non connection | 42 | VDD | - | Power supply |
| 21 | REQ | O | Output the "CD micon data request" | 43 | X1 | - | Connected to GND |
| 22 | BLKCK | I | Subcode/block/clock signal input | 44 | X0 | - | Non connection |

■ AN8806SB(IC601):RF&Servo AMP

1.Treminal Layout

| | | | |
|---|---|---|---|
| PD | 1 | 36 | PDAC |
| LD | 2 | 35 | PDBD |
| LDON | 3 | 34 | PDF |
| LDP | 4 | 33 | PDE |
| VCC | 5 | 32 | PDER |
| RF- | 6 | 31 | PDFR |
| RF OUT | 7 | 30 | TBAL |
| RF IN | 8 | 29 | FBAL |
| C.AGC | 9 | 28 | EF- |
| ARF | 10 | 27 | EF OUT |
| C.ENV | 11 | 26 | TE- |
| C.EA | 12 | 25 | TE OUT |
| CS BDO | 13 | 24 | CROSS |
| BDO | 14 | 23 | TE BPF |
| CS BRT | 15 | 22 | VDET |
| OFTR | 16 | 21 | LD OFF |
| /NRFDET | 17 | 20 | VREF |
| GND | 18 | 19 | ENV |

2.Block Diagram

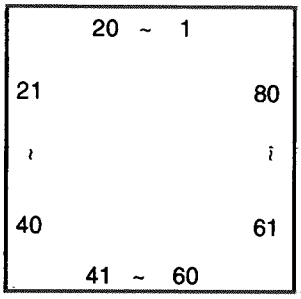


3. Functions

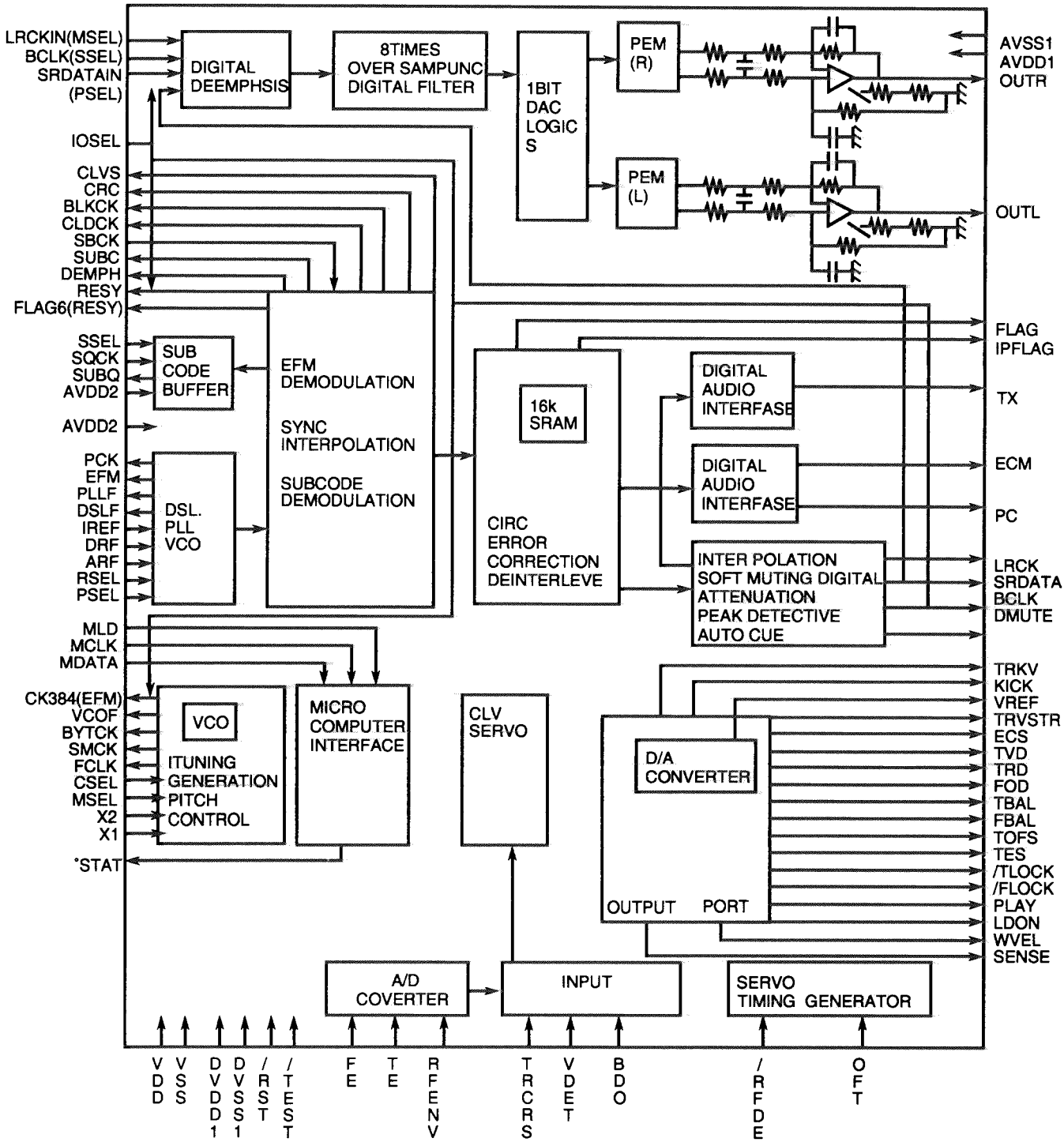
| Pin No. | Symbol | I/O | Functions and operations |
|---|---|---|---|
| 1 | PD | I | APC amp input terminal |
| 2 | LD | O | APC amp output terminal |
| 3 | LD ON | I | APC ON/OFF control terminal |
| 4 | LDP | -- | Connect to ground |
| 5 | VCC | -- | Power supply |
| 6 | RF- | I | Inverse input pin for RF amp |
| 7 | RF OUT | O | RFamp output |
| 8 | RF IN | I | RF input |
| 9 | C.AGC | I/O | Connecting pin of AGC loop filter |
| 10 | ARF | O | RF output |
| 11 | C.ENV | I/O | A capacitor is connected to this terminal to detect the envelope of RF signal |
| 12 | C.EA | I/O | A capacitor is connected to this terminal to detect the envelope of RF signal |
| 13 | CS BDO | I/O | A capacitor is connected to detect the lower envelope of RF signal |
| 14 | BDO | O | BDO output pin |
| 15 | CS BRT | I/O | A capacitor is connected to detect the lower envelope of RF signal |
| 16 | OFTR | O | Of-track status signal output |
| 17 | /NRFDET | O | RF detection signal output |
| 18 | GND | -- | Ground |
| 19 | ENV | O | Envelope output |
| 20 | VREF | O | Reference voltage output |
| 21 | LD OFF | -- | Connect to ground |
| 22 | VDET | O | Vibration detection signal output |
| 23 | TE BPF | I | Input pin of tracking error through BPF |
| 24 | CROSS | O | Tracking error cross output |
| 25 | TE OUT | O | Tracking error signal output |
| 26 | TE- | I | Inverse input pin for tracking error amp |
| 27 | FE OUT | O | Output pin of focus error |
| 28 | FE- | I | Inverse input pin for focus error amp |
| 29 | FBAL | I | Focus balance control |
| 30 | TBAL | I | Tracking balance control |
| 31 | PDFR | I/O | F I-V amp gain control |
| 32 | PDER | I/O | E I-V amp gain control |
| 33 | PDF | I | I-V amp input |
| 34 | PDE | I | I-V amp input |
| 35 | PD BD | I | I-V amp input |
| 36 | PD AC | I | I-V amp input |

■ MN35510(IC603):DIGITAL SERVO&DIGITAL SIGNAL PROCESSER

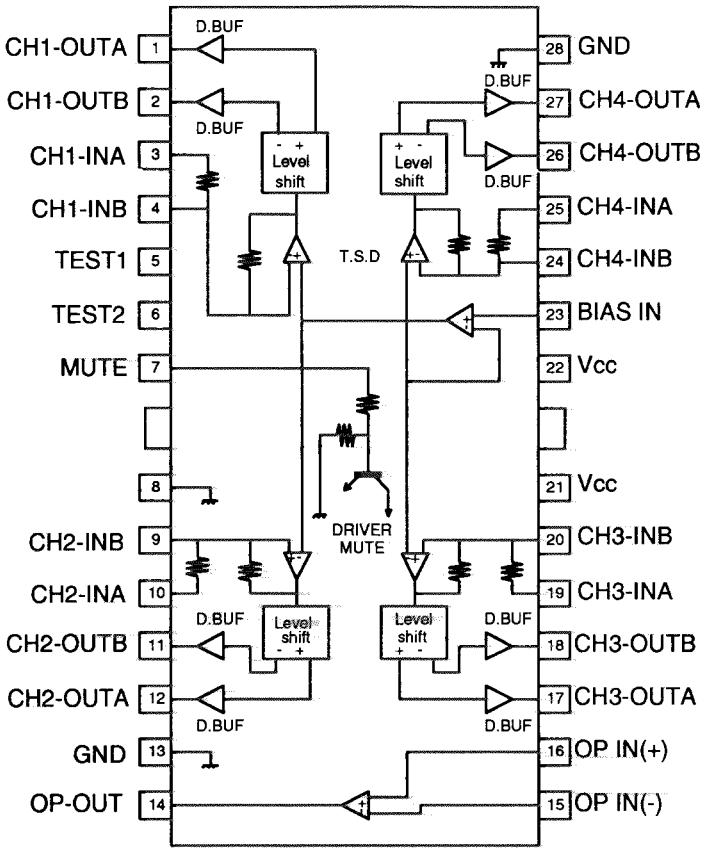
1. Terminal Layout



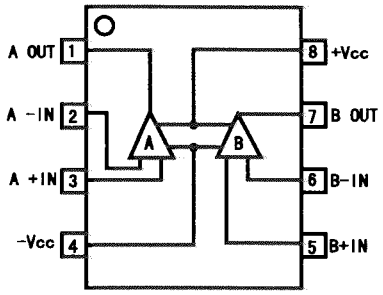

2.Block Diagram



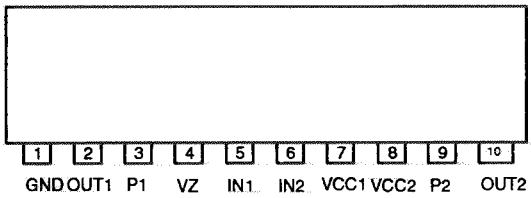
■ **BA6897FP-W(IC602) 4channel driver**




■ **NJM5532D(IC702.IC301):Dual Op. Amp.**




■ **LB1641(IC501) DC Motor Driver**



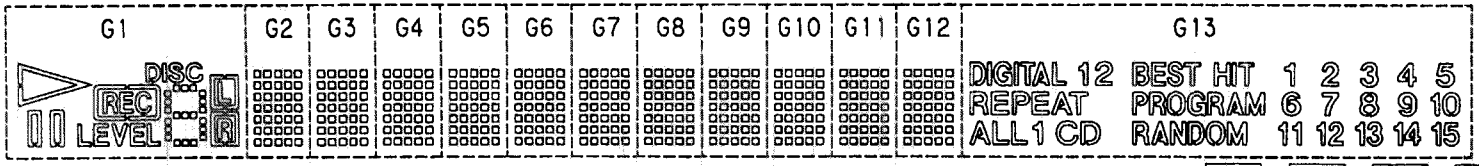

FUNCTION

| Input | | Output | | Mode |
|---|---|---|---|---|
| IN1 | IN2 | OUT1 | OUT2 | |
| 0 | 0 | 0 | 0 | Brake |
| 1 | 0 | 1 | 0 | CLOCKWISE |
| 0 | 1 | 0 | 1 | COUNTER-CLOCKWISE |
| 1 | 1 | 0 | 0 | Brake |

## Description of FL indicator tube internals

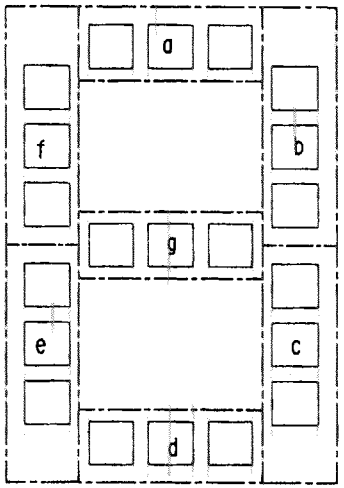
■ **QLF0030-001**

### 1. Splitting and internal connection of grid/segment

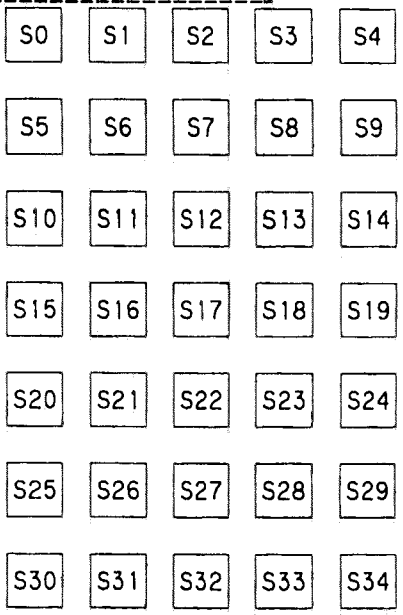



| | G1 | G2~G12 | G13 |
|---|---|---|---|
| S0 | ▷ | S0 | DIGITAL |
| S1 | DISC | S1 | (DIGITAL)1 |
| S2 | REC | S2 | (DIGITAL)2 |
| S3 | | S3 | BEST HIT |
| S4 | □□ | S4 | REPEAT |
| S5 | LEVEL | S5 | PROGRAM |
| S6 | | S6 | |
| S7 | | S7 | |
| S8 | a | S8 | ALL |
| S9 | b | S9 | (ALL) 1 |
| S10 | f | S10 | CD |
| S11 | g | S11 | |
| S12 | c | S12 | RANDOM |
| S13 | e | S13 | |
| S14 | d | S14 | |
| S15 | | S15 | |
| S16 | L | S16 | |
| S17 | | S17 | |

| | G1 | G2~G12 | G13 |
|---|---|---|---|
| S18 | | S18 | |
| S19 | | S19 | |
| S20 | | S20 | 1 |
| 21 | | 21 | 2 |
| S22 | | S22 | 3 |
| S23 | R | S23 | 4 |
| S24 | | S24 | 5 |
| S25 | | S25 | 6 |
| S26 | | S26 | 7 |
| S27 | | S27 | 8 |
| S28 | | S28 | 9 |
| S29 | | S29 | 10 |
| S30 | | S30 | 11 |
| S31 | | S31 | 12 |
| S32 | | S32 | 13 |
| S33 | | S33 | 14 |
| S34 | | S34 | 15 |




G1




G2~G12

### 2. Terminal Connection

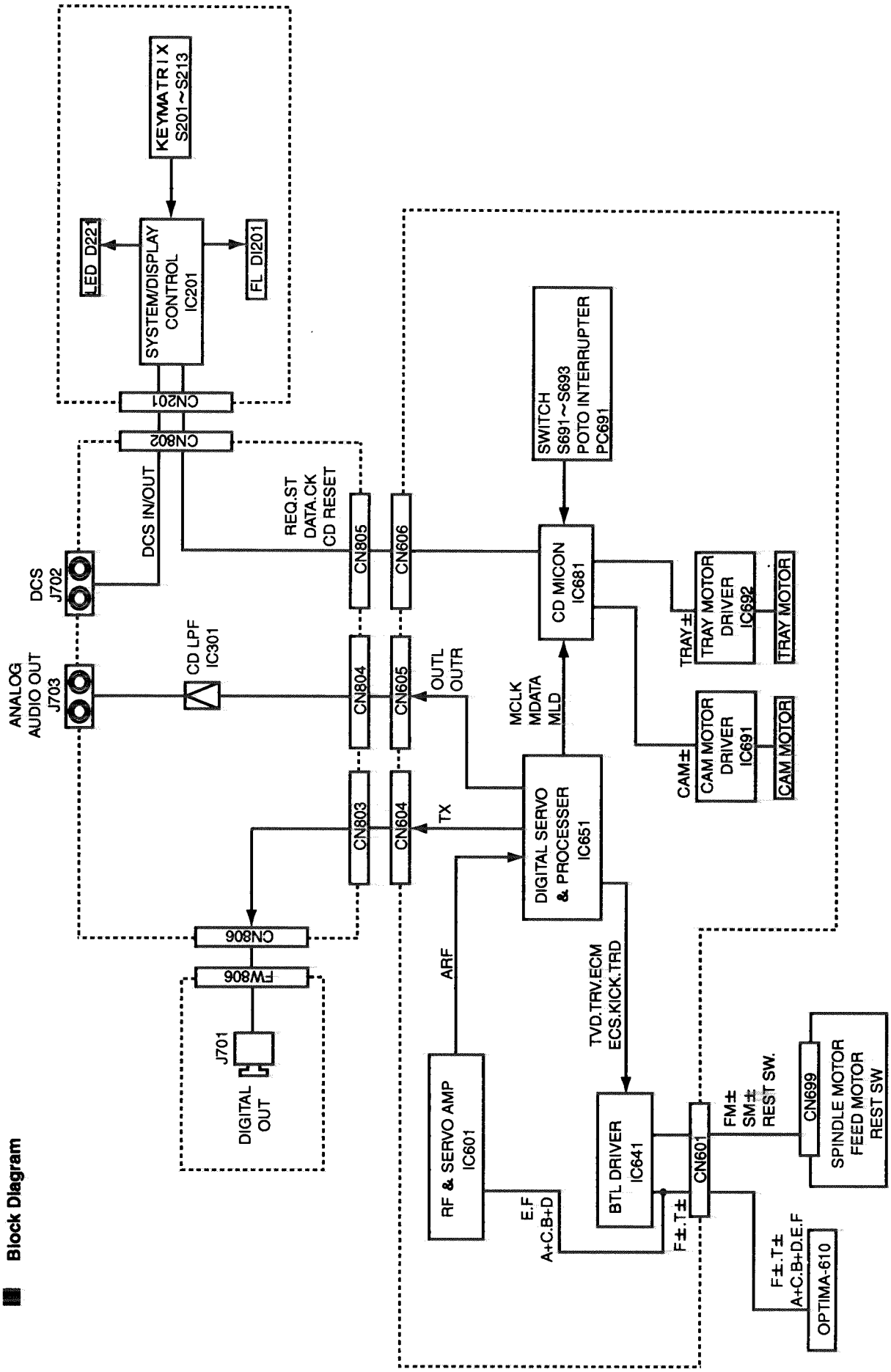
| Pin No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | F1 | F1 | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | G9 | G10 | G11 | G12 | G13 | S34 | S33 | S32 | S31 | S30 | S29 | S28 | S27 | S26 | S25 | S24 | S23 |

| Pin No. | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assignment | S22 | S21 | S20 | S19 | S18 | S17 | S16 | S15 | S14 | S13 | S12 | S11 | S10 | S9 | S8 | S7 | S6 | S5 | S4 | S3 | S2 | S1 | S0 | H | D | F2 | F2 |

F1,F2:Filament G1~G13:Grid S0~S34:Anode D: Connect externally to F1

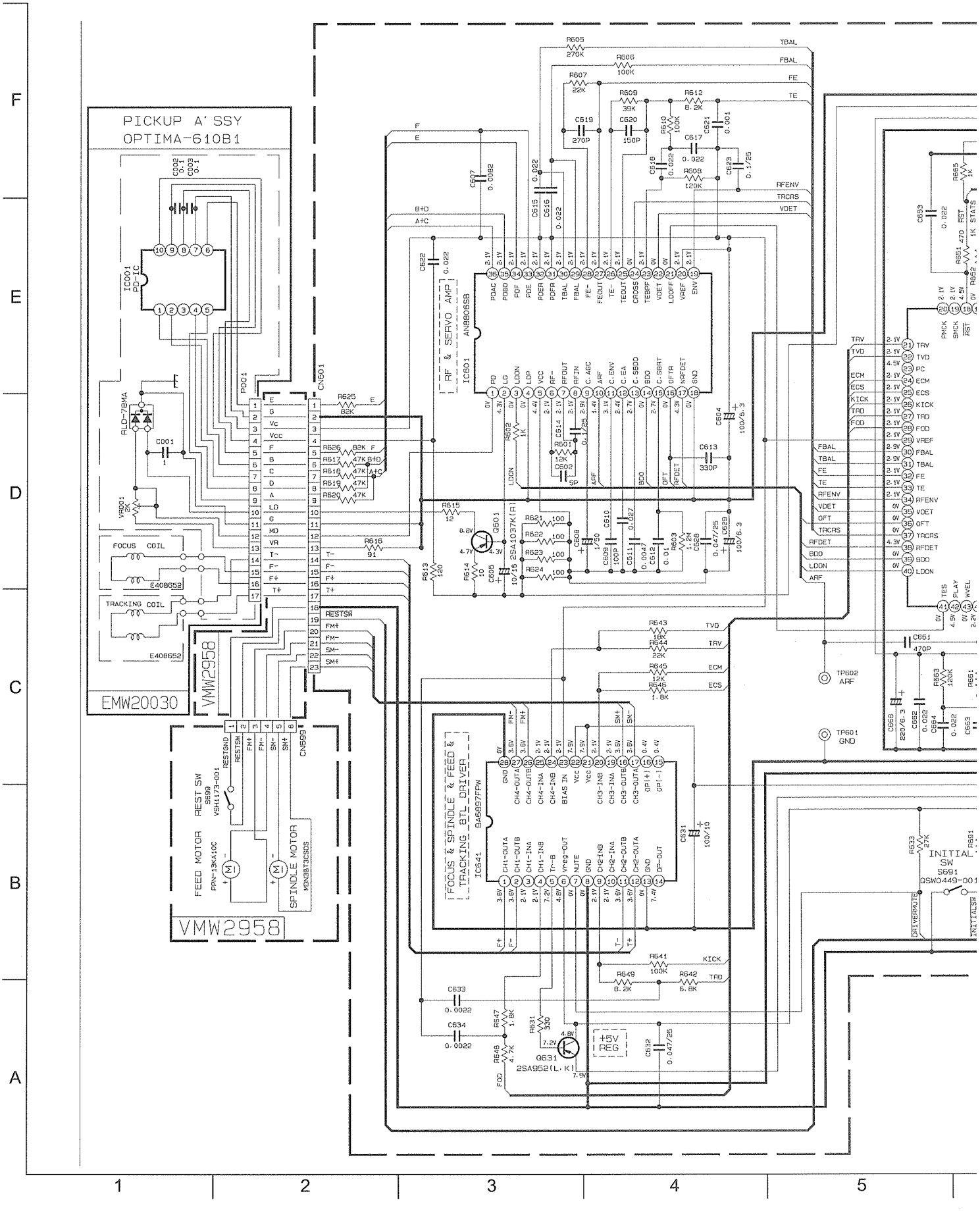
H: Normal current passing grid

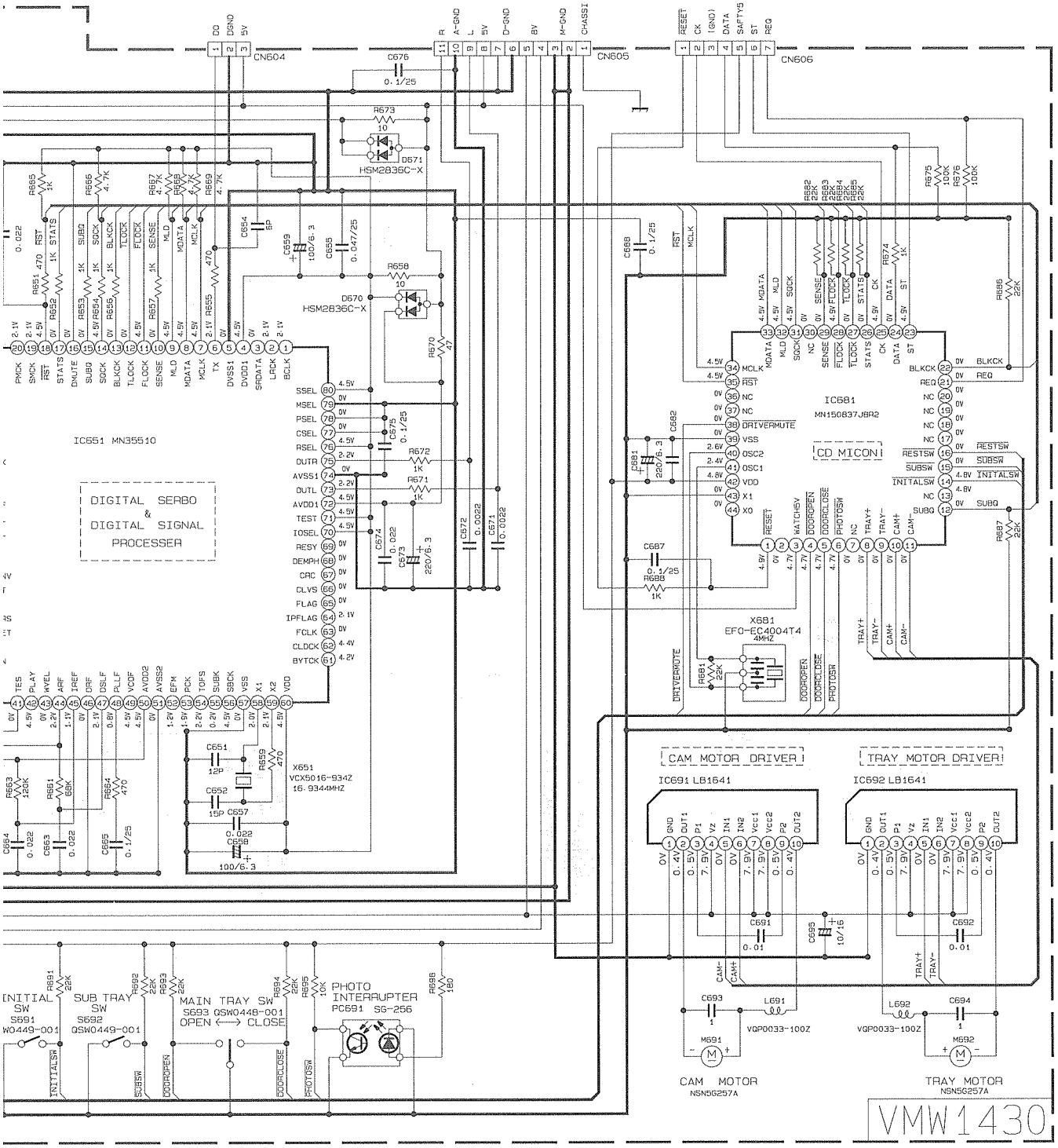
## Block Diagram



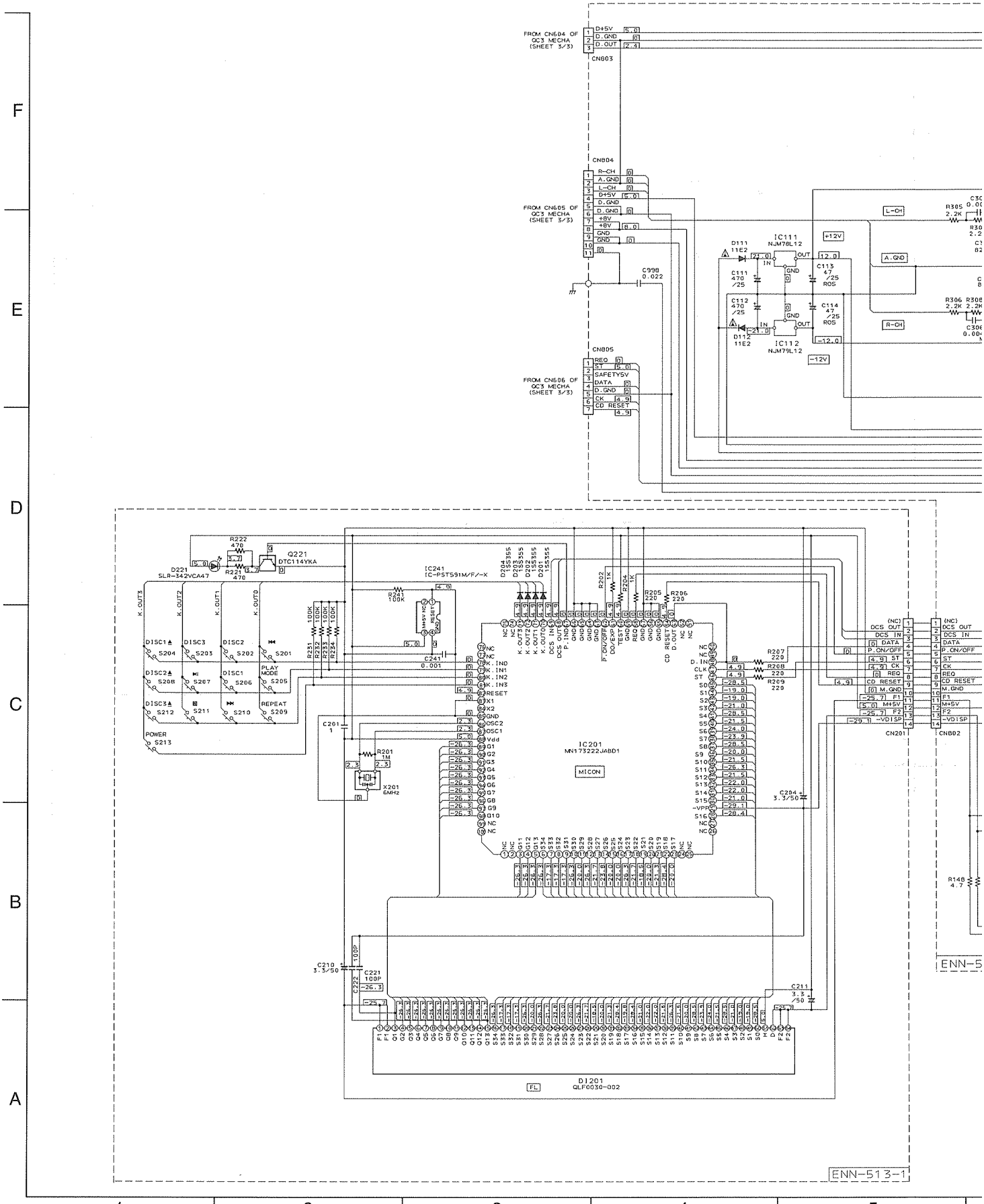
# Standard Schematic Diagrams

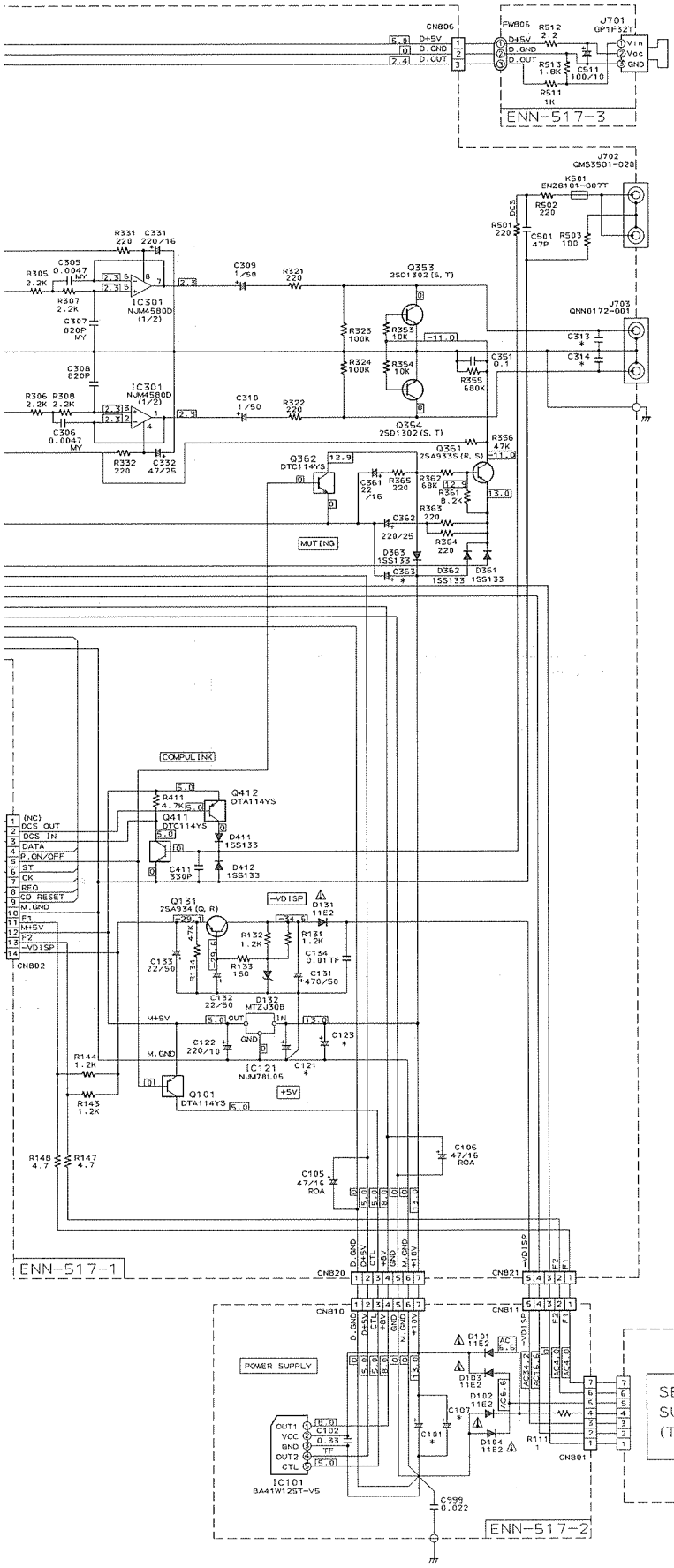
## [XL-EX90] CD Section




CN604
CN605
CN606
IC651 MN35510
DIGITAL SERBO & DIGITAL SIGNAL PROCESSER
IC681
MN150837J8R2
CD MICON
X651
VCX5016-934Z
16.9344MHZ
X681
EFO-EC4004T4
4MHZ
CAM MOTOR DRIVER
TRAY MOTOR DRIVER
IC691 LB1641
IC692 LB1641
D671
HSM2836C-X
D670
HSM2836C-X
INITIAL SW
S691
WO449-001
SUB TRAY SW
S692
QSW0449-001
MAIN TRAY SW
S693 QSW0448-001
OPEN ⟷ CLOSE
PHOTO INTERRUPTER
PC691 SG-256
CAM MOTOR
NSN56257A
TRAY MOTOR
NSN56257A
VQP0033-100Z
VQP0033-100Z
VMW1430

## [XL-EX90] System Control






*MARK

| | E, EE, EN, B | J, C<br>UF, U, UB<br>US, UT |
|---|---|---|
| C313<br>C314 | 470P | NONE |

*MARK

| | J, C,<br>E, EE, EN, B | UF, U, UB,<br>US, UT |
|---|---|---|
| C101 | 6800/16 | 6800/25 |
| C107 | NONE | 220/25 |
| C121 | 470/16 | 1000/25 |
| C123 | NONE | 1000/25 |
| C363 | NONE | 1000/25 |

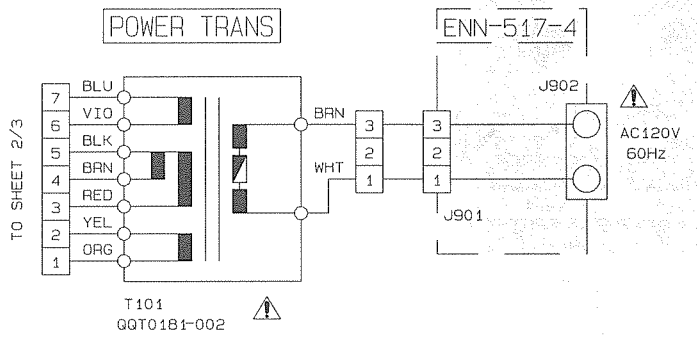
**[XL-EX90] Power Supply**

| EXPLANATION OF OVERALL OF SCHEMA |
| --- |
| MODEL XL-EX70/XL-EX90 |

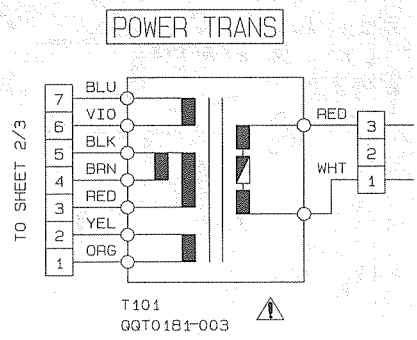
| SHEET NUMBER | CIRCUITS DESCRIPTION |
| --- | --- |
| 1/3 | PRIMARY WITH MAINS TRANSFORMER. |
| 2/3 | DC REGULATORS.<br>AUDIO OUTPUT/EXTERNAL SIGNAL INPU<br>SYSTEM CONTROL LSI.<br>FL DISPLAY. |
| 3/3 | SYSTEM CONTROL LSI FOR CD MECHA.<br>DIGITAL SIGNAL PROCESSOR. |

POWER SUPPLY

J / C




E / EN / EE /




NOTE:
MARK(*) IS TO SHOW DEVIATION IN VERSION.
DETAILS ARE EXPLAINED NEAR THE MARK.

ER.

INPUT.

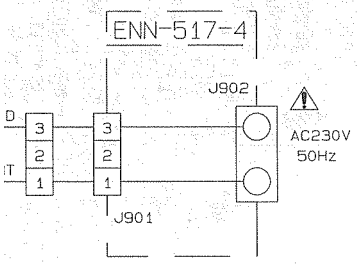
CHA.

## VERSION CODES

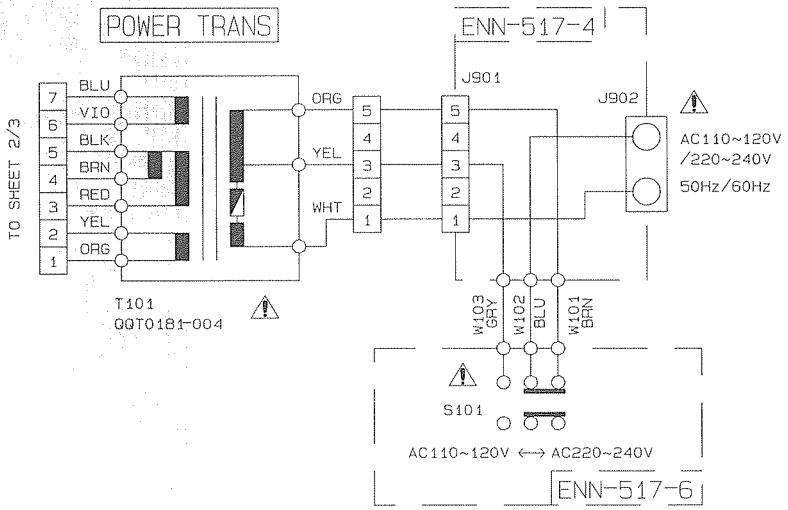
J : U.S.A.
C : CANADA
E : CONTINENTAL EUROPE
EN : NORDIC COUNTRIES
EE : EASTERN EUROPE
B : U.K.
UB : HONGKONG
UF : CHINA
US : SINGAPORE
UT : TAIWAN
U : UNIVERSAL EXPECT ALL OF ABOVES

PPLY SECTION

EE / B

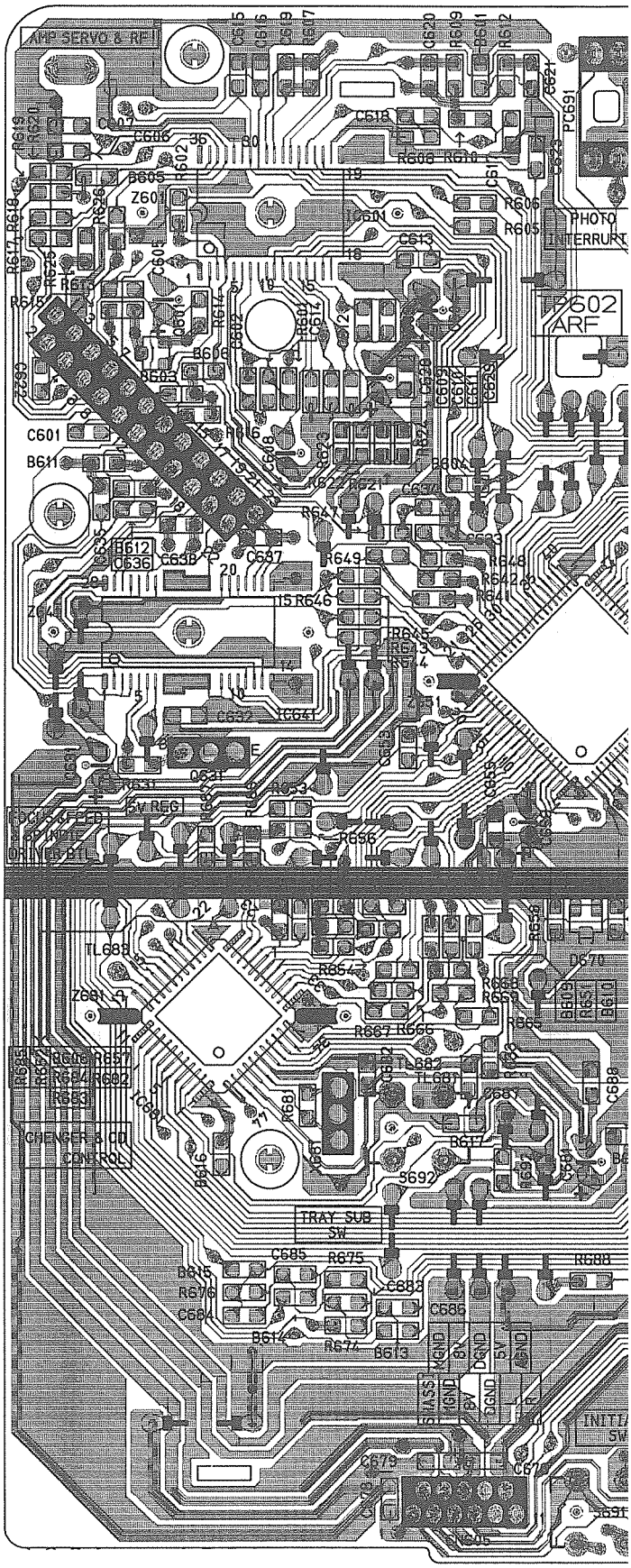


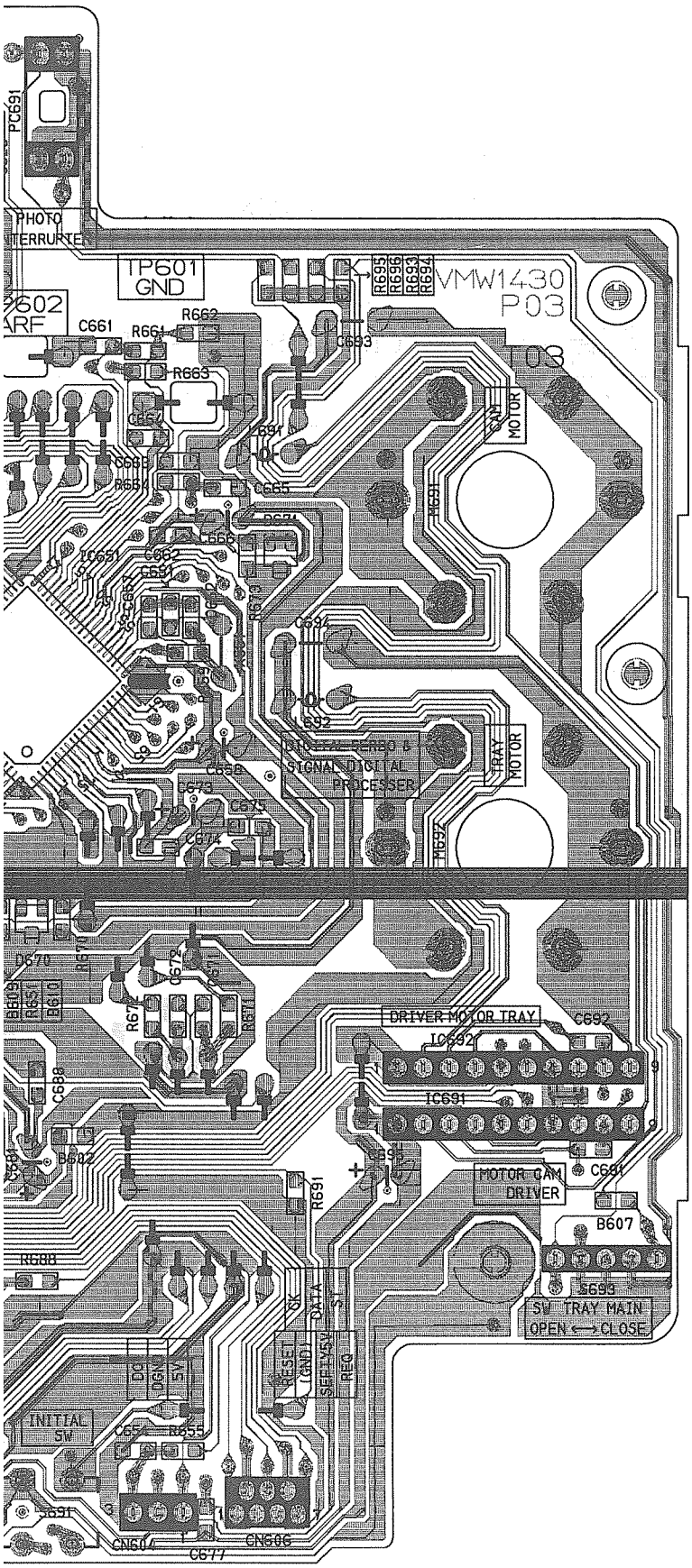

U / UB / UF / US / UT



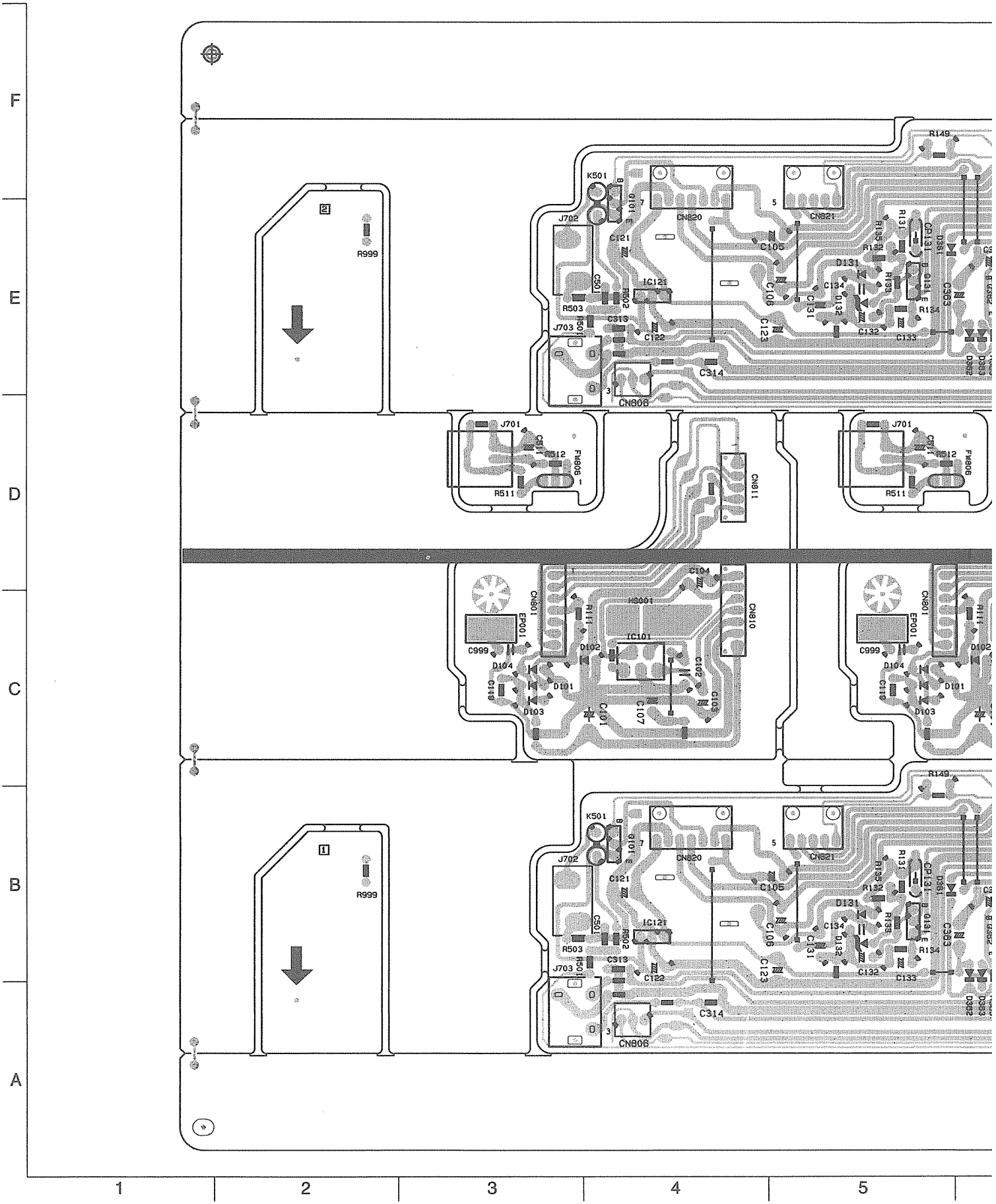
# Location of P.C. Board Parts

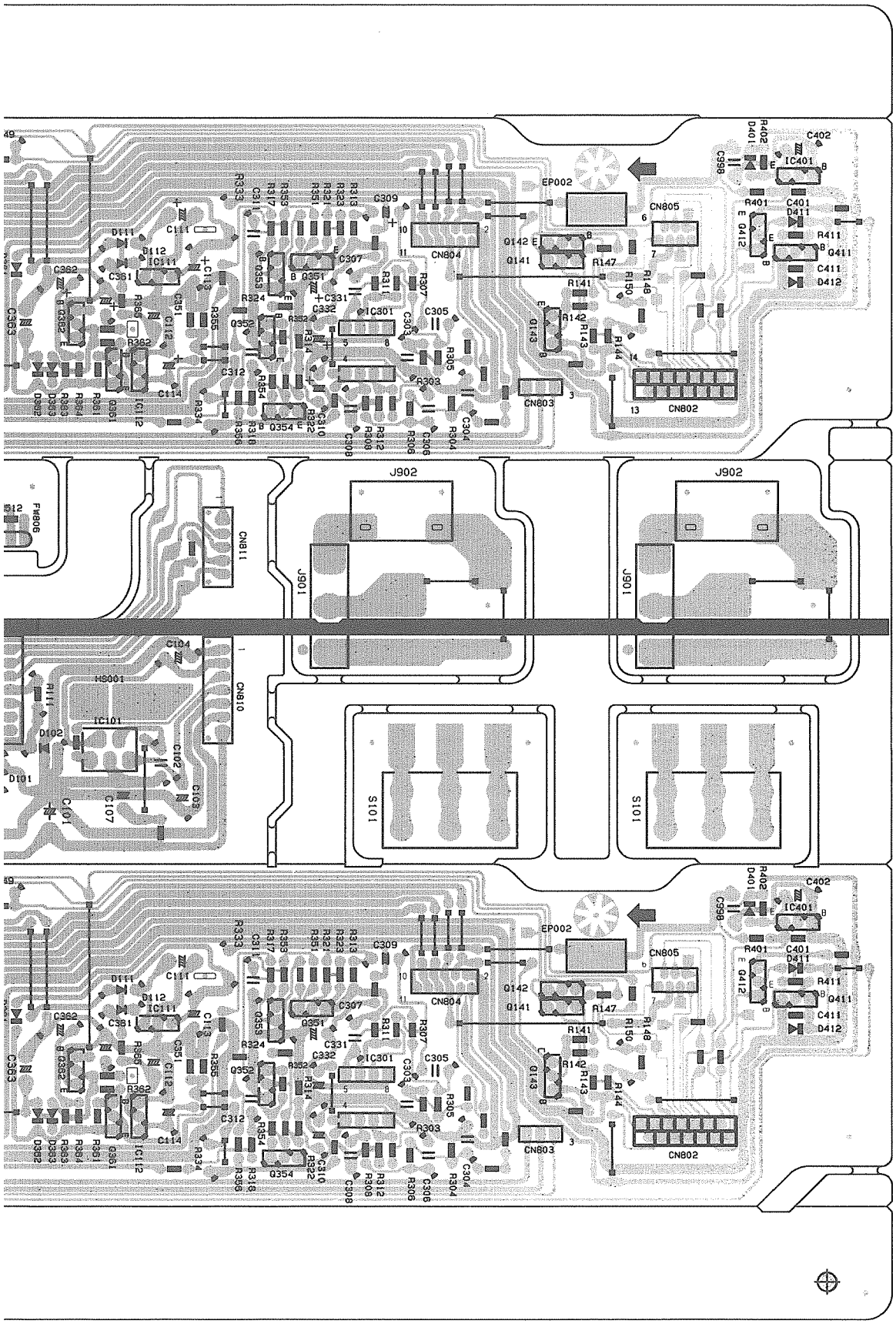
**[XL-EX90] CD Section**




PC691
PHOTO
TERRUPTE
TP601
GND
VMW1430
P03
R695
R696
R693
R694
C661
R662
R661
C693
R663
C664
C691
C665
R691
C666
C662
C691
IC651
C694
C692
IC601
SIGNAL DIGITAL
PROCESSER
C650
C673
C675
C674
R697
D670
C672
R671
R672
C688
B602
R691
R688
DRIVER MOTOR TRAY
C692
IC692
IC691
C681
MOTOR CAM
DRIVER
B607
S693
SW TRAY MAIN
OPEN ⟷ CLOSE
SCL
DATA
ST
RESET
(GND)
SEET/VSY
REQ
DG
DGN
5V
INITIAL
SW
C655
R655
S691
CN604
CN606
C677
SPINDLE
MOTOR
SLED
MOTOR
TRAY
MOTOR

## [XL-EX90] System Control




J902
J902
J901
J901
S101
S101
CN811
CN810
CN804
CN805
CN803
CN802
EP002
IC401
IC301
IC101
IC111
IC112
Q354
Q352
Q351
Q355
Q141
Q142
Q143
Q412
Q411
R147
R141
R150
R148
R144
R143
R142
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R411
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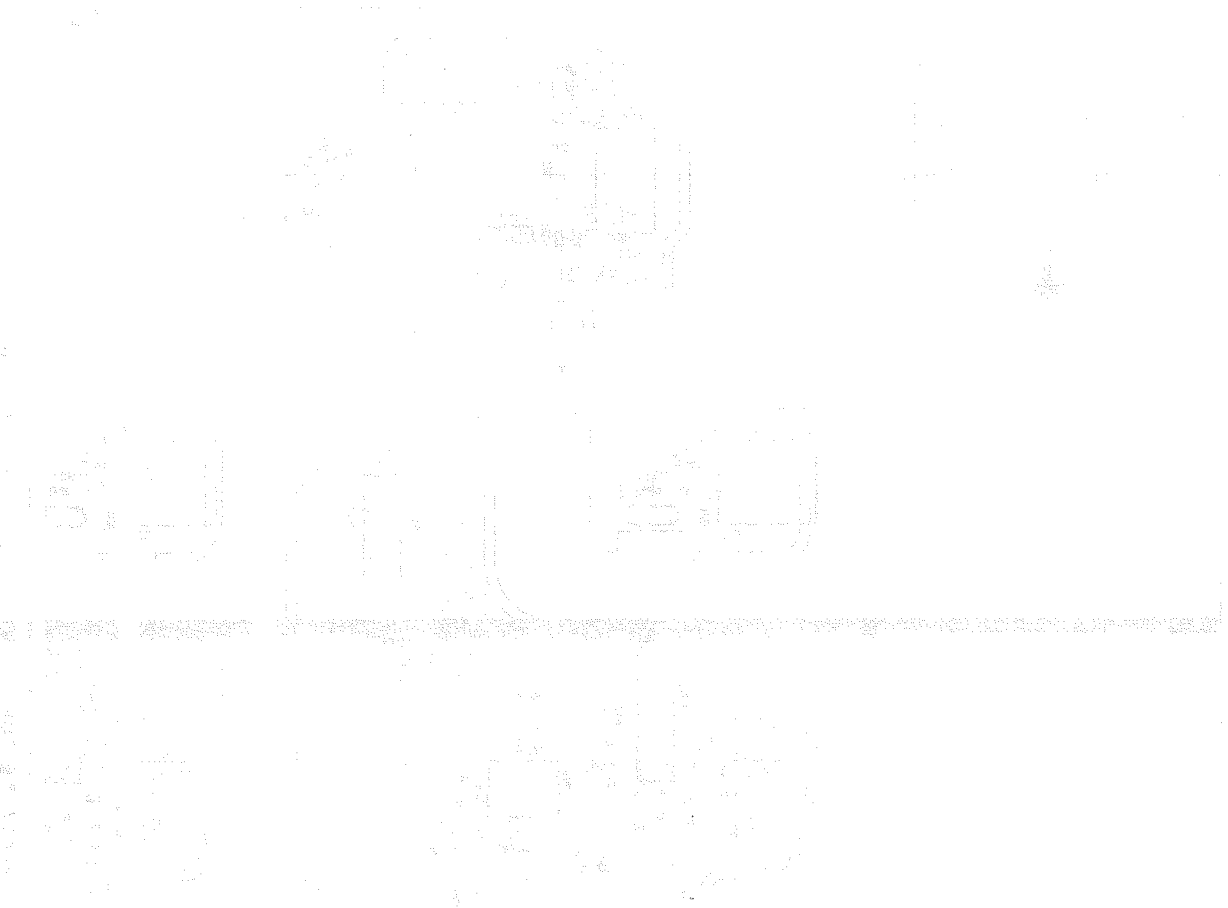
C111
C112
C101
C102
C103
C104
C107
D401
D411
D412
D111
D112
D101
D102
HS001
FW806

6 | 7 | 8 | 9 | 10



# PARTS LIST

## [ XL-EX90 ]

1.Those parts can not to sent as a rule that has not printed or be displayed 「—」 on the parts list.
2. The printed circuit board will be not sent as a rule.
3. ⚠ Parts are safety assurance parts. When replacing those parts, make sure to use to specified one.
4. All printed circuit boards and its assemblies are not available as service parts.

**Area Suffix**

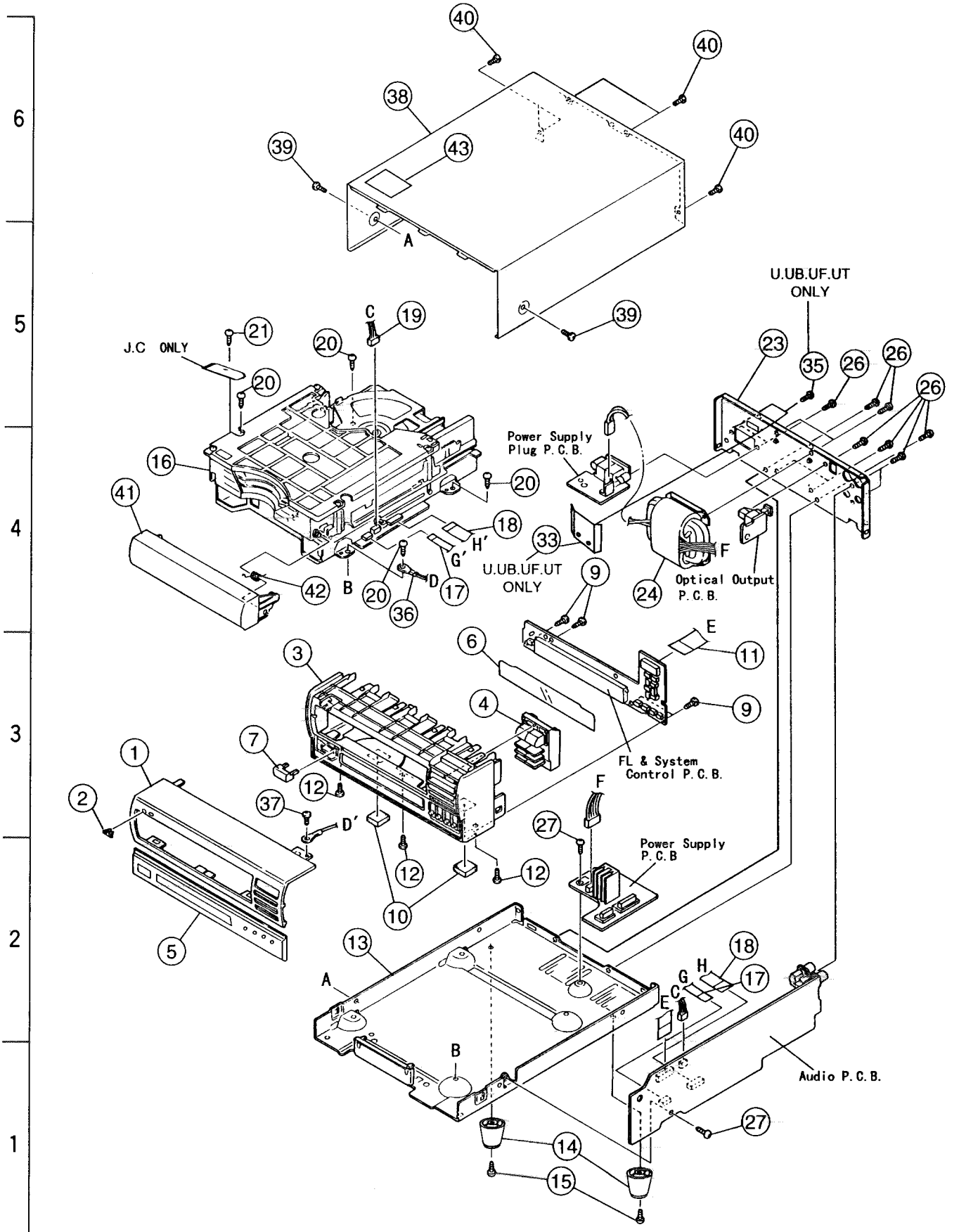
| | |
|---|---|
| C | Canada |
| J | U.S.A. |
| U | Other Areas |
| UB | Hong Kong |
| UF | China |
| US | Singapore |
| UT | Taiwan |
| B | U.K |
| E | Continental Europe |
| EN | Northan Europe |
| EE | Eastern Europe |

- Contents -

General Exploded View and Parts List ---------- 7 - 2
CD Mechanism Parts List ---------- 7 - 4
Electrical Parts List---------- 7 - 7
FL & System Control P.C.B ---------- 7 - 7
Power Supply & Audio P.C.B.---------- 7 - 8
CD Servo P.C.B.---------- 7 - 9

# General Exploded View and Parts List

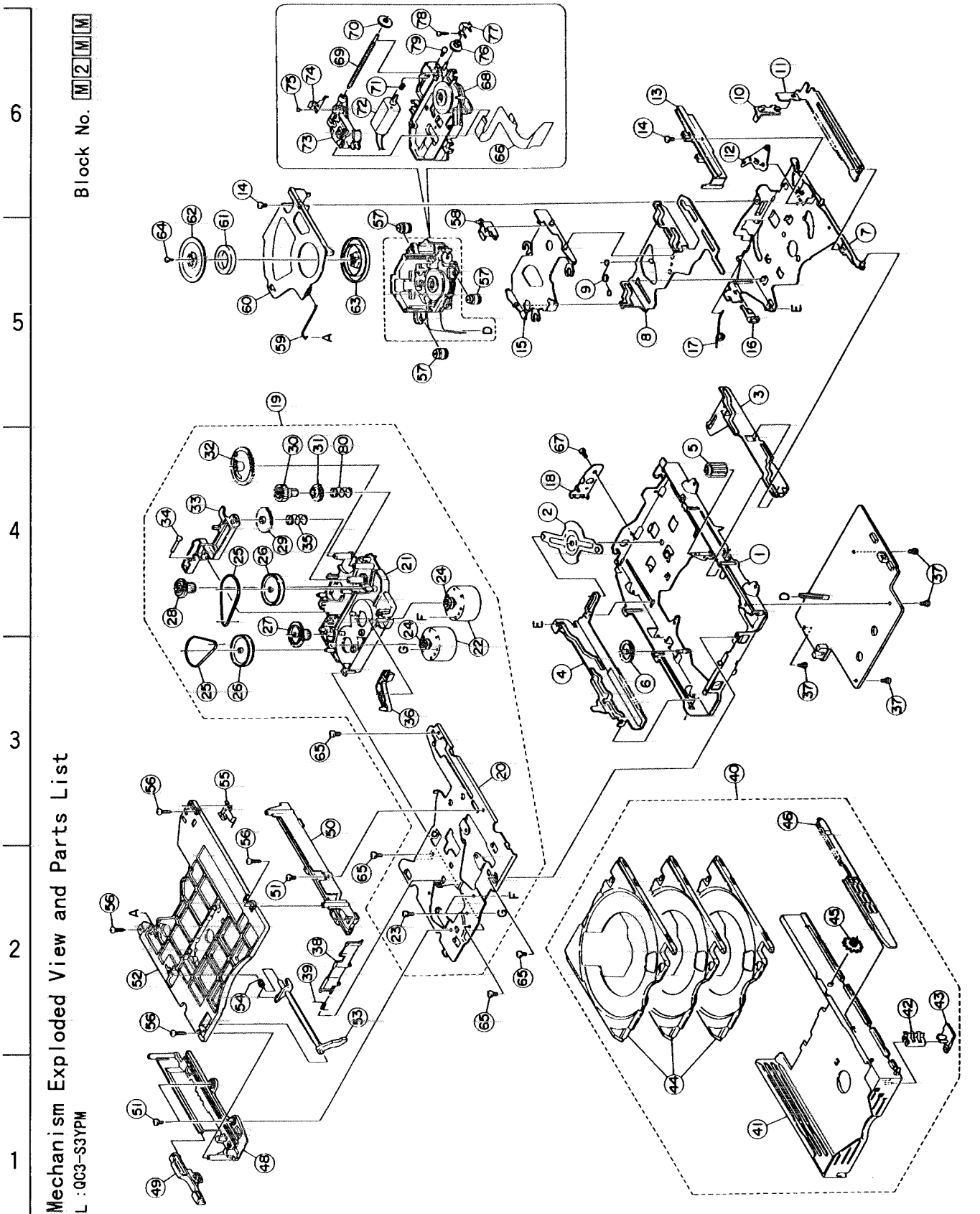
Block No. M1MM



■PARTS LIST

Block No. M1MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 1 | LE20338-003A | FRONT PANEL | 1 | | |
| | 2 | E406971-001SM | JVC MARK | 1 | | |
| | 3 | LE10159-002A | FRONT BASE | 1 | | |
| | 4 | LE20340-002A | PUSH BUTTON | 1 | | |
| | 5 | LE30556-005A | WINDOW SCREEN | 1 | | |
| | 6 | LE30550-002A | FL SCREEN | 1 | | |
| | 7 | LE30547-001A | PLAY CAP | 1 | | CJ |
| | | LE30547-002A | POWER CAP | 1 | | BEEEENUUBUFUSUT |
| | 9 | QYSDSF2608Z | SCREW | 4 | | |
| | 10 | E75896-001 | SPACER | 2 | | |
| | 11 | VWF1214-12TTBX | FLAT WIRE | 1 | FC802 CN201-CN802 | |
| | 12 | QYSDSG3006E | T.SCREW | 3 | | |
| | 13 | LE10160-001A | CHASSIS BASE | 1 | | |
| | 14 | E47227-029 | FOOT | 2 | | |
| | 15 | QYSBSG3008E | T.SCREW | 2 | | |
| | 16 | ---------- | 3CD MECHA ASS'Y | 1 | | |
| | 17 | VWF1007-08TTAX | FLAT WIRE | 1 | FC616 CN606-CN805 | |
| | 18 | VWF1011-08TTAX | FLAT WIRE | 1 | FC615 CN605-CN804 | |
| | 19 | EWS243-092 | SOCKET WIRE | 1 | SC781 | |
| | 20 | QYSBST3006E | TAP.SCREW | 4 | | |
| | 21 | QYSBSF3006Z | SCREW | 1 | | CJ |
| | 23 | LE20342-011A | REAR PANEL | 1 | | J |
| | | LE20342-012A | REAR PANEL | 1 | | C |
| | | LE20342-013A | REAR PANEL | 1 | | UUBUFUS |
| | | LE20342-014A | REAR PANEL | 1 | | UT |
| | | LE20342-015A | REAR PANEL | 1 | | BEEN |
| | | LE20342-017A | REAR PANEL | 1 | | EE |
| ⚠ | 24 | QQT0181-002 | POWER TRANSFORMER | 1 | T101 | J |
| | | QQT0181-003 | POWER TRANSFORMER | 1 | T101 | BEEEEN |
| | | QQT0181-004 | POWER TRANSFORMER | 1 | T101 | UUBUFUSUT |
| | | QQT0181-005 | POWER TRANSFORMER | 1 | T101 | C |
| | 26 | QYSBSGY3008E | SPECIAL SCREW | 11 | | |
| | 27 | QYSBSG3008E | T.SCREW | 2 | | |
| | 33 | LV40418-001A | SHIELD COVER | 1 | | UUBUFUSUT |
| | 35 | QYSBSG2608M | T.SCREW | 2 | | UUBUFUSUT |
| | 36 | EWT025-009 | TERMINAL WIRE | 1 | | |
| | 37 | QYSDSG3006E | T.SCREW | 1 | | |
| | 38 | LE20334-002A | METAL COVER | 1 | | |
| | 39 | QYSDSG3006N | T.SCREW | 2 | | |
| | 40 | QYSBSGG3008E | T.SCREW | 4 | | |
| | 41 | LE20344-003A | CD FITTING | 1 | | |
| | 42 | LE40352-001A | SPRING | 1 | | |
| | 43 | LV40555-001A | CAUTION LABEL | 1 | | |


Block No. M2MM
CD Mechanism Exploded View and Parts List
MODEL :QC3-S3YPM
1
2
3
4
5
6
A
B
C
D
E

## ■CD Mechanism Parts List

Block No. M2MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 1 | VKM3893-00B | CHASSIS ASS'Y | 1 | | |
| | 2 | VKL7846-00BKP | CONTROL ARM ASS'Y | 1 | | |
| | 3 | VKL2763-001 | SLIDE CAM(L) | 1 | | |
| | 4 | VKL2764-001 | SLIDE CAM(R) | 1 | | |
| | 5 | VKS3765-001 | HOOK GEAR | 1 | | |
| | 6 | VKS3766-001 | POSITION GEAR | 1 | | |
| | 7 | VKM3895-00CKP | LIFTER BASE ASS'Y | 1 | | |
| | 8 | VKL2766-004 | LIFTER | 1 | | |
| | 9 | VKW5245-003 | DIRECTION SPRING | 1 | | |
| | 10 | VKS3767-001 | HOOK | 1 | | |
| | 11 | VKM3896-002KP | HOOK SLIDER | 1 | | |
| | 12 | VKM3897-001 | LOCK ARM | 1 | | |
| | 13 | VKS3768-002KP | GUIDE RAIL | 1 | | |
| | 14 | QYSDST2605Z | SCREW(M2.6 X 5) | 2 | | |
| | 15 | VKM3898-00C | FLOATING BASE | 1 | | |
| | 16 | VKS3769-001 | TRAY HOLDER | 1 | | |
| | 17 | VKW5250-002 | LIFT SPRING | 1 | | |
| | 18 | VKL7881-003KP | PROTECTOR | 1 | | |
| | 19 | VKS2267-00EKP | ACTUATOR UNIT | 1 | | |
| | 20 | VKL2768-001 | TRAY BASE | 1 | | |
| | 21 | VKS1162-001 | ACTUATOR BASE | 1 | | |
| | 22 | MSN5G257A | DC MOTOR | 2 | | |
| | 23 | QYSPSPL2606Z | SCREW | 2 | | |
| | 24 | VKS5548-001 | MOTOR PULLEY | 2 | | |
| | 25 | VKB3000-177 | BELT | 2 | | |
| | 26 | VKS5549-001 | PULLEY GEAR | 2 | | |
| | 27 | VKS5550-001 | THIRD GEAR (C) | 1 | | |
| | 28 | VKS5551-001 | THIRD GEAR (T) | 1 | | |
| | 29 | VKS5552-001 | ELAVATOR GEAR | 1 | | |
| | 30 | VKS5553-002KP | M.T GEAR | 1 | | |
| | 31 | VKS5554-001 | UP.DOWN GEAR | 1 | | |
| | 32 | VKS3770-003KP | SWITCH GEAR | 1 | | |
| | 33 | VKS2269-001 | ELEVATOR ARM | 1 | | |
| | 34 | VKH5783-001 | ELEVATOR PIN | 1 | | |
| | 35 | VKW5246-001 | ELEVATOR SPRING | 1 | | |
| | 36 | VKS3772-001 | M.T DETECTOR | 1 | | |
| | 37 | QYSDST2605Z | SCREW(M2.6 X 5) | 4 | | |
| | 38 | VKS3773-001 | LID PLATE | 1 | | |
| | 39 | VKW5247-003 | SPRING | 1 | | |
| | 40 | VKS2270-00DKP | TRAY UNIT | 1 | | |
| | 41 | VKS1157-002KP | DISC CASE | 1 | | |
| | 42 | VKM3900-002KP | CLIC SPRING | 1 | | |
| | 43 | VKS3774-001 | SPRING COVER | 1 | | |
| | 44 | VKS1158-003KP | SUB TRAY | 3 | | |
| | 45 | VKS5555-001 | PLANET GEAR | 1 | | |
| | 46 | VKS3775-001 | DOOR LEVER | 1 | | |
| | 48 | VKS1159-001 | TRAY GUIDE(L) | 1 | | |

## ■CD Mechanism Parts List

Block No. M2MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | 49 | VKS3777-001 | SELECT SW | 1 | | |
| | 50 | VKS1160-001 | TRAY GUIDE(R) | 1 | | |
| | 51 | QYSDST2605Z | SCREW(M2.6 X 5) | 3 | | |
| | 52 | VKS1163-003 | TOP COVER | 1 | | |
| | 53 | VKS3778-001 | SELECTOR | 1 | | |
| | 54 | VKW5248-001 | SELECTOR SPRING | 1 | | |
| | 55 | VKM3901-001 | CLICK SPRING | 1 | | |
| | 56 | QYSBSF2608Z | SCREW(M2.6 X 8) | 4 | | |
| | 57 | VKZ4791-001 | INSULATOR | 3 | | |
| | 58 | VKS3779-001 | STOPPER | 1 | | |
| | 59 | VKW5249-001 | ROD | 1 | | |
| | 60 | VKL2769-003KP | CLAMPER BASE | 1 | | |
| | 61 | VYH7313-003 | MAGNET | 1 | | |
| | 62 | VKL7757-001 | YOKE PLATE | 1 | | |
| | 63 | VKS3780-002KP | CLAMPER | 1 | | |
| | 64 | QYSPSF2604Z | SCREW | 1 | | |
| | 65 | QYSDST2605Z | SCREW(M2.6 X 5) | 4 | | |
| | 66 | VMW3699-001 | F.P.C. | 1 | | |
| | 67 | QYSDST2605Z | SCREW(M2.6 X 5) | 1 | | |
| | 68 | VKS1161-002 | T.MECHA CHASSIS | 1 | | |
| | 69 | VKZ4781-001 | SCREW SHAFT | 1 | | |
| | 70 | VKS5556-001 | FEED GEAR | 1 | | |
| | 71 | VKS5557-001 | LOADING GEAR | 1 | | |
| | 72 | PPN-13KA10C | DC MOTOR | 1 | | |
| | 73 | OPTIMA-610B1 | CD PICK UP UNIT | 1 | | |
| | 74 | VKM3903-001 | RACK ARM | 1 | | |
| | 75 | QYSPSPT1714M | SCREW(M1.7 X 1.4) | 2 | | |
| | 76 | VKS5558-001 | MIDDLE GEAR | 1 | | |
| | 77 | VKM3904-001 | SHAFT HOLDER | 1 | | |
| | 78 | VKZ4248-206 | ASS'Y SCREW | 1 | | |
| | 79 | QYSPSPL2004Z | SCREW | 1 | | |
| | 80 | VKW5314-001 | UP DOWN SPRING | 1 | | |

■ Electrical parts list(FL & System Control P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | IC201 | MN173222JABD1 | I.C(M) | |
| | IC241 | IC-PST591M/E/-X | I.C(M) | |
| | C201 | NCF21CZ-105X | C CAP.1.0MF +80:-20% | |
| | C204 | NEA21HM-335NZM | E.CAP.3.3MF 20% 50V | |
| | C210 | NEA21HM-335NZM | E.CAP.3.3MF 20% 50V | |
| | C211 | NEA21HM-335NZM | E.CAP.3.3MF 20% 50V | |
| | C221 | NCS31HJ-101X | C.CAPA. C.M 3.3MF 20% 50V | |
| | C222 | NCS31HJ-101X | C.CAPA. C.M 100PF 5% 50V | |
| | C241 | NCS31HJ-102X | C.CAPA. C.M.100PF 5% 50V | |
| | D201 | 1SS355-X | SI.DIODE 1000PF 5% 50V | |
| | D202 | 1SS355-X | SI.DIODE | |
| | D203 | 1SS355-X | SI.DIODE | |
| | D204 | 1SS355-X | SI.DIODE | |
| | D221 | SLR-342VC-T | L.E.D. | |
| | Q221 | DTC114YKA-X | DIGITAL TRANSISTOR | |
| | R201 | NRSA63J-105X | MG RES.1.0M 5% | |
| | R202 | NRSA63J-102X | MG RES.1.0K 5% | |
| | R204 | NRSA63J-102X | MG RES.1.0K 5% | |
| | R205 | NRSA63J-221X | MG RES.220 5% | |
| | R206 | NRSA63J-221X | MG RES.220 5% | |
| | R207 | NRSA63J-221X | MG RES.220 5% | |
| | R208 | NRSA63J-221X | MG RES.220 5% | |
| | R209 | NRSA63J-221X | MG RES.220 5% | |
| | R221 | NRSA63J-471X | MG RES.470 5% | |
| | R222 | NRSA63J-471X | MG RES.470 5% | |
| | R231 | NRSA63J-104X | MG RES.100K 5% | |
| | R232 | NRSA63J-104X | MG RES.100K 5% | |
| | R233 | NRSA63J-104X | MG RES.100K 5% | |
| | R234 | NRSA63J-104X | MG RES.100K 5% | |
| | R241 | NRSA63J-104X | MG RES.100K 5% | |
| | S201 | NSW0062-001X | TACT SWITCH | |
| | S202 | NSW0062-001X | TACT SWITCH | |
| | S203 | NSW0062-001X | TACT SWITCH | |
| | S204 | NSW0062-001X | TACT SWITCH | |
| | S205 | NSW0062-001X | TACT SWITCH | |
| | S206 | NSW0062-001X | TACT SWITCH | |
| | S207 | NSW0062-001X | TACT SWITCH | |
| | S208 | NSW0062-001X | TACT SWITCH | |
| | S209 | NSW0062-001X | TACT SWITCH | |
| | S210 | NSW0062-001X | TACT SWITCH | |
| | S211 | NSW0062-001X | TACT SWITCH | |
| | S212 | NSW0062-001X | TACT SWITCH | |
| | S213 | NSW0062-001X | TACT SWITCH | |
| | X201 | NAX0192-001X | CRYSTAL | |
| | CN201 | QGF1210G1-14 | CONNECTOR | |
| | DI201 | QLF0030-002 | FLUORESCENT DISPLAY TUBE | |
| | FH201 | LE30640-001A | FL HOLDER | |
| | FH202 | LE30640-002A | FL HOLDER | |
| | FS201 | E3400-431 | FELT SPACER | |
| | FS202 | E3400-431 | FELT SPACER | |
| | | OTHER | | |
| | | EHW10735-002 | CIR BOARD | |

# CA-EX90/-EX90R

■Electrical parts list(Power Supply &Audio P.C.Board)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | IC 101 | BA41W12ST-V5 | I.C(M) | |
| | IC 111 | NJM78L12A-T | I.C. | |
| | IC 112 | NJM79L12A-T | I.C. | |
| | IC 121 | NJM78L05A-T | I.C. | |
| | IC 301 | NJM5532D | I.C(MONO-ANALOG) | |
| | | DIODE | | |
| | D 101 | 11E2-T5 | SILICON | |
| | D 102 | 11E2-T5 | SILICON | |
| | D 103 | 11E2-T5 | SILICON | |
| | D 104 | 11E2-T5 | SILICON | |
| | D 111 | 11E2-T5 | SILICON | |
| | D 112 | 11E2-T5 | SILICON | |
| | D 131 | 11E2-T5 | SILICON | |
| | D 132 | MTZJ30B-T2 | ZENER | |
| | D 361 | 1SS133-T2 | SI.DIODE | |
| | D 362 | 1SS133-T2 | SI.DIODE | |
| | D 363 | 1SS133-T2 | SI.DIODE | |
| | D 411 | 1SS133-T2 | SI.DIODE | |
| | D 412 | 1SS133-T2 | SI.DIODE | |
| | | TRANSISTOR | | |
| | Q 101 | DTA114YS | DIGITAL TRANSISTOR | |
| | Q 131 | 2SA934/QR/-T | SILICON | |
| | Q 353 | 2SD1302/ST/-T | SILICON | |
| | Q 354 | 2SD1302/ST/-T | SILICON | |
| | Q 361 | 2SA933S/RS/-T | SILICON | |
| | Q 362 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q 411 | DTC114YS | DIGITAL TRANSISTOR | |
| | Q 412 | DTA114YS | DIGITAL TRANSISTOR | |
| | | CAPACITOR | | |
| | C 101 | QETM1CM-688 | ELECTRO 6800MF 20% 16V | BCEEEENJ |
| | | QETM1EM-688 | AL E.CAP. 6800MF 20% 25V | UUBUFUSUT |
| | C 102 | QFVJ1HJ-334Z | T.FILM .33MF 5% 50V | |
| | C 105 | QTE1C03-476Z | AL E.CAP. | |
| | C 106 | QTE1C03-476Z | AL E.CAP. | |
| | C 107 | QETC1EM-227ZN | AL E.CAP. 220MF 20% 25V | UUBUFUSUT |
| | C 111 | QETB1EM-477E | E.CAP. 470MF 20% 25V | |
| | C 112 | QETB1EM-477E | E.CAP. 470MF 20% 25V | |
| | C 113 | QTE1E06-476Z | AL E.CAP. | |
| | C 114 | QTE1E06-476Z | AL E.CAP. | |
| | C 121 | QETB1CM-477M | E.CAP. 470MF 20% 16V | BCEEEENJ |
| | | QETM1EM-108 | ELECTRO 1000MF 20% 25V | UUBUFUSUT |
| | C 122 | QETC1CM-227Z | AL E.CAP. 220MF 20% 16V | |
| | C 123 | QETM1EM-108 | ELECTRO 1000MF 20% 25V | UUBUFUSUT |
| | C 131 | QETB1HM-107 | E.CAP.100MF 20% 50V | |
| | C 132 | QETB1HM-226E | E.CAP.22MF 20% 50V | |
| | C 133 | QETB1HM-226E | E.CAP.22MF 20% 50V | |
| | C 134 | QFVJ1HJ-103Z | T.FILM .010MF 5% 50V | |
| | C 305 | QFLB1HJ-472 | MYLAR CAP.4700PF 5% 50V | |
| | C 306 | QFLB1HJ-472 | MYLAR CAP.4700PF 5% 50V | |
| | C 307 | QFLB1HJ-821 | MYLAR CAP.820PF 5% 50V | |
| | C 308 | QFLB1HJ-821 | MYLAR CAP.820PF 5% 50V | |
| | C 309 | QTE1H28-106Z | E CAP. | |
| | C 310 | QTE1H28-106Z | E CAP. | |
| | C 313 | QCBB1HK-471Y | CER.CAP. (S)470PF 10% 50V | BEEEEN |
| | C 314 | QCBB1HK-471Y | CER.CAP. (S)470PF 10% 50V | BEEEEN |
| | C 331 | QETC1CM-227Z | AL E.CAP.220MF 20% 16V | |
| | C 332 | QETB1EM-476 | AL E.CAP.47MF 20% 25V | |
| | C 351 | QDYB1CM-103Y | C CAP. | |
| | C 361 | QETB1EM-226N | E.CAP.22MF 20% 25V | |
| | C 362 | QETC1EM-227ZN | AL E.CAP.22MF 20% 25V | |
| | C 411 | QCBB1HK-331Y | CER.CAP. (S)330PF 10% 50V | |
| | C 501 | QCSB1HJ-470 | CER.CAP. (S)47PF 5% 50V | |
| | C 511 | QETC1AM-107ZN | E.CAP.100MF 20% 10V | |
| | C 998 | QCF31HZ-223Z | CERAMIC.022MF +80:-20% | |
| | C 999 | QCF31HZ-223Z | CERAMIC.022MF +80:-20% | |
| | | RESISTOR | | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R 111 | QRE141J-1R0Y | R.NETWORK 1.0 5% 1/4W | |
| | | QRJ146J-1R0X | UNF.CARBON R 1.0 5% 1/4W | |
| | R 131 | QRE141J-122Y | R.NETWORK 1.2K 5% 1/4W | |
| | R 133 | QRE141J-151Y | R.NETWORK 150 5% 1/4W | |
| | R 134 | QRE141J-473Y | R.NETWORK 47K 5% 1/4W | |
| | R 135 | QRJ146J-122X | UNF.CARBON R 1.2K 5% 1/4W | |
| | R 143 | QRE141J-122Y | R.NETWORK 1.2K 5% 1/4W | |
| | R 144 | QRE141J-122Y | R.NETWORK 1.2K 5% 1/4W | |
| | R 149 | QRJ146J-4R7X | UNF.CARBON R 4.7 5% 1/4W | |
| | R 150 | QRJ146J-4R7X | UNF.CARBON R 4.7 5% 1/4W | |
| | R 305 | QRA14CF-2201Y | R.NETWORK 22 1% 1/4W | |
| | R 306 | QRA14CF-2201Y | R.NETWORK 22 1% 1/4W | |
| | R 307 | QRA14CF-2201Y | R.NETWORK 22 1% 1/4W | |
| | R 308 | QRA14CF-2201Y | R.NETWORK 22 1% 1/4W | |
| | R 321 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 322 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 323 | QRA14CF-1003Y | R.NETWORK 10 1% 1/4W | |
| | R 324 | QRA14CF-1003Y | R.NETWORK 10 1% 1/4W | |
| | R 333 | QRJ146J-221X | R.NETWORK 220 5% 1/4W | |
| | R 334 | QRJ146J-221X | R.NETWORK 220 5% 1/4W | |
| | R 353 | QRE141J-103Y | CARBON RES. 10K 5% 1/4W | |
| | R 354 | QRE141J-103Y | CARBON RES. 10K 5% 1/4W | |
| | R 355 | QRE141J-684Y | R.NETWORK 680K 5% 1/4W | |
| | R 356 | QRE141J-473Y | R.NETWORK 47K 5% 1/4W | |
| | R 361 | QRE141J-822Y | R.NETWORK 8.2K 5% 1/4W | |
| | R 362 | QRE141J-683Y | R.NETWORK 68K 5% 1/4W | |
| | R 363 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 364 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 365 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 411 | QRE141J-472Y | R.NETWORK 4.7K 5% 1/4W | |
| | R 501 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 502 | QRE141J-221Y | R.NETWORK 220 5% 1/4W | |
| | R 503 | QRE141J-101Y | R.NETWORK 100 5% 1/4W | |
| | R 511 | QRE141J-102Y | R.NETWORK 1.0K 5% 1/4W | |
| | R 512 | QRE141J-2R2Y | R.NETWORK 1.0K 5% 1/4W | |
| | R 513 | QRE141J-182Y | R.NETWORK 1.8K 5% 1/4W | |
| | R 999 | QRE141J-102Y | R.NETWORK 1.0K 5% 1/4W | CJ |
| | | OTHER | | |
| | | EMW10734-103 | CIR BOARD | |
| | | QYSBSG3008E | T.SCREW | |
| | J 701 | GP1F32T | OPTICAL JACK | |
| | J 702 | QNS0016-001 | 3.5 JACK | |
| | J 703 | QNN0172-001 | PIN JACK | |
| | J 901 | QGA7901C1-02 | CONNECTOR | BCEEEENJ |
| | | QGA7901C1-03 | CONNECTOR | UUBUFUSUT |
| | J 902 | QNC0030-001 | AC INLET | BEEEENUUBUFUSUT |
| | | QNC0052-001 | AC INLET | CJ |
| | K 501 | QQR0601-001Z | F.BEADS I.M | |
| | S 101 | QSW0513-001 | SLIDE SW. | UUBUFUSUT |
| | CN 801 | QGA2501C1-07 | 7P CONNECTOR | |
| | CN 802 | QGF1207F1-14 | CONNECTOR | |
| | CN 803 | QGA2501F1-03 | CONNECTOR | |
| | CN 804 | QGF1016C1-11 | CONNECTOR | |
| | CN 805 | QGF1016C1-07 | CONNECTOR | |
| | CN 806 | QGD2501C1-03Z | SOCKET I.M | |
| | CN 810 | QGB2510J1-07 | CONNECTOR | |
| | CN 811 | QGB2510J1-05 | CONNECTOR | |
| | CN 820 | QGB2510K2-07 | CONNECTOR | |
| | CN 821 | QGB2510K2-05 | CONNECTOR | |
| | EP 001 | QNZ0136-001Z | IM EARTH PLATE | |
| | EP 002 | QNZ0136-001Z | IM EARTH PLATE | |
| | FW 806 | EWR33B-08LST | FLAT WIRE | |
| | HS 001 | LV40057-H30B | HEAT SINK | |

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | | I.C.S | | |
| | IC601 | AN8806SB | I.C | |
| | IC641 | BA6897FPW | I.C | |
| | IC651 | MN35510 | I.C | |
| | IC681 | MN150837J8R3 | I.C | |
| | IC691 | LB1641 | I.C | |
| | IC692 | LB1641 | I.C | |
| | | DIODES | | |
| | D670 | MA152WA-TX | DIODE | |
| | D671 | MA152WA-TX | DIODE | |
| | | TRANSISTORS | | |
| | Q601 | 2SA1037K(R) | SI.TRANSISTOR | |
| | Q631 | 2SA952(L,K) | SI.TRANSISTOR | |
| | | CAPACITORS | | |
| | C602 | NCS21HJ-5R0 | 5PF 50V C.CAPACITOR | |
| | C604 | QEKF0JM-107Z | 100MF 6.3V E.CAPACITOR | |
| | C605 | QEK41CM-106 | 10MF 16V E.CAPACITOR | |
| | C607 | NCB21HK-822AY | 8200PF 50V C.CAPACITOR | |
| | C608 | QEKJ1HM-105Z | 1MF 50V D.CAPACITOR | |
| | C609 | NCS21HJ-101X | 100PF 50V C.CAPACITOR | |
| | C610 | NCB21HK-273AY | 0.027MF 50V C.CAPACITOR | |
| | C611 | NCB21HK-472AY | 4700PF 50V C.CAPACITOR | |
| | C612 | NCB21HK-103AY | 0.01MF 50V C.CAPACITOR | |
| | C613 | NCS21HJ-331AY | 330PF 50V C.CAPACITOR | |
| | C614 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C615 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C616 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C617 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C618 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C619 | NCS21HJ-271AY | 270PF 50V C.CAPACITOR | |
| | C620 | NCS21HJ-151X | 150PF 50V C.CAPACITOR | |
| | C621 | NCB21HK-102AY | 1000PF 50V C.CAPACITOR | |
| | C622 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C623 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C628 | NCB21HK-473AY | 0.047MF 50V C.CAPACITOR | |
| | C629 | QEKF0JM-107Z | 100MF 6.3V E.CAPACITOR | |
| | C631 | QEKJ1AM-107ZM | 100MF 10V E.CAPACITOR | |
| | C632 | NCB21HK-473AY | 0.047MF 50V C.CAPACITOR | |
| | C633 | NCB21HK-222AY | 2200PF 50V C.CAPACITOR | |
| | C634 | NCB21HK-222AY | 2200PF 50V C.CAPACITOR | |
| | C651 | NCS21HJ-120AY | 12PF 50V C.CAPACITOR | |
| | C652 | NCS21HJ-150AY | 15PF 50V C.CAPACITOR | |
| | C653 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C654 | NCS21HJ-6R0AY | 6PF 50V C.CAPACITOR | |
| | C655 | NCB21HK-473AY | 0.047MF 50V C.CAPACITOR | |
| | C657 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C658 | QEKF0JM-107Z | 100MF 6.3V E.CAPACITOR | |
| | C659 | QEKF0JM-107Z | 100MF 6.3V E.CAPACITOR | |
| | C661 | NCS21HJ-471AY | 470PF 50V C.CAPACITOR | |
| | C662 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C663 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C664 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C665 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C666 | QEKJ0JM-227Z | 220MF 6.3V E.CAPACITOR | |
| | C671 | NCB21HK-222AY | 2200PF 50V C.CAPACITOR | |
| | C672 | NCB21HK-222AY | 2200PF 50V C.CAPACITOR | |
| | C673 | QEK40JM-227 | 220MF 6.3V E.CAPACITOR | |
| | C674 | NCB21HK-223AY | 0.022MF 50V C.CAPACITOR | |
| | C675 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C676 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C681 | QEK40JM-227 | 220MF 6.3V E.CAPACITOR | |
| | C687 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C688 | NCB21EK-104AYU | 0.1MF 25V C.CAPACITOR | |
| | C691 | NCB21HK-103AY | 0.01MF 50V C.CAPACITOR | |
| | C692 | NCB21HK-103AY | 0.01MF 50V C.CAPACITOR | |
| | C693 | VCP0012-105Z | 1MF C.CAPACITOR | |

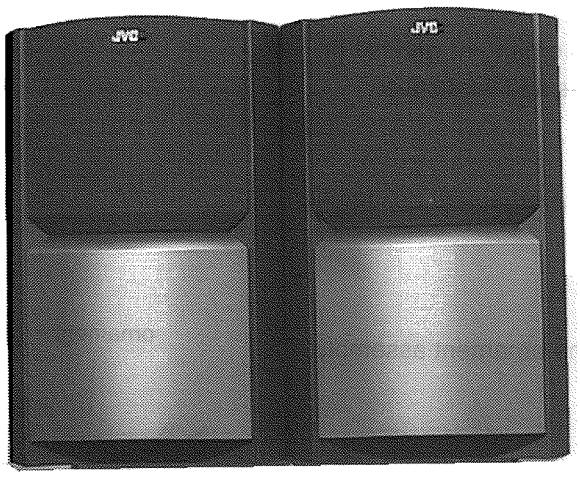
| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | C694 | VCP0012-105Z | 1MF C.CAPACITOR | |
| | C695 | QEK41CM-106 | 10MF 16V E.CAPACITOR | |
| | | RESISTORS | | |
| | R601 | NRSA02J-123NY | MG RESISITOR | |
| | R602 | NRSA02J-102NY | MG RESISITOR | |
| | R603 | NRSA02J-125NY | MG RESISITOR | |
| | R605 | NRSA02J-274NY | MG RESISITOR | |
| | R606 | NRSA02J-104NY | MG RESISITOR | |
| | R607 | NRSA02J-223NY | MG RESISITOR | |
| | R608 | NRSA02J-124NY | MG RESISITOR | |
| | R609 | NRSA02J-393NY | MG RESISITOR | |
| | R610 | NRSA02J-104NY | MG RESISITOR | |
| | R612 | NRSA02J-822NY | MG RESISITOR | |
| | R613 | NRSA02J-121NY | MG RESISITOR | |
| | R614 | NRSA02J-100NY | MG RESISITOR | |
| | R615 | NRSA02J-120NY | MG RESISITOR | |
| | R616 | NRSA02J-910NY | MG RESISITOR | |
| | R617 | NRSA02J-473NY | MG RESISITOR | |
| | R618 | NRSA02J-473NY | MG RESISITOR | |
| | R619 | NRSA02J-473NY | MG RESISITOR | |
| | R620 | NRSA02J-473NY | MG RESISITOR | |
| | R621 | NRSA02J-101NY | MG RESISITOR | |
| | R622 | NRSA02J-101NY | MG RESISITOR | |
| | R623 | NRSA02J-101NY | MG RESISITOR | |
| | R624 | NRSA02J-101NY | MG RESISITOR | |
| | R625 | NRSA02J-823NY | MG RESISITOR | |
| | R626 | NRSA02J-823NY | MG RESISITOR | |
| | R631 | NRSA02J-331NY | MG RESISITOR | |
| | R633 | NRSA02J-273NY | MG RESISITOR | |
| | R641 | NRSA02J-104NY | MG RESISITOR | |
| | R642 | NRSA02J-682NY | MG RESISITOR | |
| | R643 | NRSA02J-183NY | MG RESISITOR | |
| | R644 | NRSA02J-223NY | MG RESISITOR | |
| | R645 | NRSA02J-223NY | MG RESISITOR | |
| | R646 | NRSA02J-182NY | MG RESISITOR | |
| | R647 | NRSA02J-182NY | MG RESISITOR | |
| | R648 | NRSA02J-472NY | MG RESISITOR | |
| | R649 | NRSA02J-822NY | MG RESISITOR | |
| | R651 | NRSA02J-471NY | MG RESISITOR | |
| | R652 | NRSA02J-102NY | MG RESISITOR | |
| | R653 | NRSA02J-102NY | MG RESISITOR | |
| | R654 | NRSA02J-102NY | MG RESISITOR | |
| | R655 | NRSA02J-471NY | MG RESISITOR | |
| | R656 | NRSA02J-102NY | MG RESISITOR | |
| | R657 | NRSA02J-102NY | MG RESISITOR | |
| | R658 | NRSA02J-100NY | MG RESISITOR | |
| | R659 | NRSA02J-471NY | MG RESISITOR | |
| | R661 | NRSA02J-683NY | MG RESISITOR | |
| | R662 | NRSA02J-155NY | MG RESISITOR | |
| | R663 | NRSA02J-124NY | MG RESISITOR | |
| | R664 | NRSA02J-471NY | MG RESISITOR | |
| | R665 | NRSA02J-102NY | MG RESISITOR | |
| | R666 | NRSA02J-472NY | MG RESISITOR | |
| | R667 | NRSA02J-472NY | MG RESISITOR | |
| | R668 | NRSA02J-472NY | MG RESISITOR | |
| | R669 | NRSA02J-472NY | MG RESISITOR | |
| | R670 | NRSA02J-470NY | MG RESISITOR | |
| | R671 | NRSA02J-102NY | MG RESISITOR | |
| | R672 | NRSA02J-102NY | MG RESISITOR | |
| | R673 | NRSA02J-100NY | MG RESISITOR | |
| | R674 | NRSA02J-102NY | MG RESISITOR | |
| | R675 | NRSA02J-104NY | MG RESISITOR | |
| | R676 | NRSA02J-104NY | MG RESISITOR | |
| | R681 | NRSA02J-223NY | MG RESISITOR | |
| | R682 | NRSA02J-223NY | MG RESISITOR | |
| | R683 | NRSA02J-223NY | MG RESISITOR | |

# CA-EX90/-EX90R

■Electric PartsList(CD Servo P.C.B.)

| ⚠ | Item | Parts Number | Description | Area |
|---|---|---|---|---|
| | R684 | NRSA02J-223NY | MG RESISITOR | |
| | R685 | NRSA02J-223NY | MG RESISITOR | |
| | R686 | NRSA02J-223NY | MG RESISITOR | |
| | R687 | NRSA02J-223NY | MG RESISITOR | |
| | R688 | NRSA02J-102NY | MG RESISITOR | |
| | R691 | NRSA02J-223NY | MG RESISITOR | |
| | R692 | NRSA02J-223NY | MG RESISITOR | |
| | R693 | NRSA02J-223NY | MG RESISITOR | |
| | R694 | NRSA02J-223NY | MG RESISITOR | |
| | R695 | NRSA02J-103NY | MG RESISITOR | |
| | R696 | NRSA02J-181NY | MG RESISITOR | |
| | | OTHERS | | |
| | | VSH1173-001 | SWITCH | |
| | | EMV7169-006R | CONNECT TERMINAL | |
| | B601 | NRSA02J-0R0NY | MG RESISITOR | |
| | B602 | NRSA02J-0R0NY | MG RESISITOR | |
| | B603 | NRSA02J-0R0NY | MG RESISITOR | |
| | B604 | NRSA02J-0R0NY | MG RESISITOR | |
| | B605 | NRSA02J-0R0NY | MG RESISITOR | |
| | B606 | NRSA02J-0R0NY | MG RESISITOR | |
| | B607 | NRSA02J-0R0NY | MG RESISITOR | |
| | B608 | NRSA02J-0R0NY | MG RESISITOR | |
| | B609 | NRSA02J-0R0NY | MG RESISITOR | |
| | B610 | NRSA02J-0R0NY | MG RESISITOR | |
| | B611 | NRSA02J-0R0NY | MG RESISITOR | |
| | B612 | NRSA02J-0R0NY | MG RESISITOR | |
| | B613 | NRSA02J-0R0NY | MG RESISITOR | |
| | B614 | NRSA02J-0R0NY | MG RESISITOR | |
| | B615 | NRSA02J-0R0NY | MG RESISITOR | |
| | B616 | NRSA02J-0R0NY | MG RESISITOR | |
| | B617 | NRSA02J-0R0NY | MG RESISITOR | |
| | L691 | VQP0033-100Z | INDUCTOR | |
| | L692 | VQP0033-100Z | INDUCTOR | |
| | S691 | QSW0449-001 | SWITCH | |
| | S692 | QSW0449-001 | SWITCH | |
| | S693 | ESS1200-002 | SWITCH | |
| | X651 | VCX5016-934V | CRYSTAL | |
| | X681 | EFO-EC4004T4 | CER.RESONATOR | |
| | Z651 | VYH7237-003 | IC HOLDER | |
| | Z681 | VYH7237-001SS | IC HOLDER | |
| | CN601 | VMC0332-023 | CONNECTOR | |
| | CN604 | VMC0040-003 | CONNECTOR | |
| | CN605 | EMV7171-111R | CONNECTOR | |
| | CN606 | EMV7171-107R | CONNECTOR | |
| | PC691 | SG-256 | I.C(PHOTO-INTERRUPTOR) | |

# SP-EX90



| Area Suffix | |
|---|---|
| C | Canada |
| E | Continental Europe |
| J | The U.S.A |
| US | Singapore |
| UT | Taiwan |
| U | Other Area |

## Contents

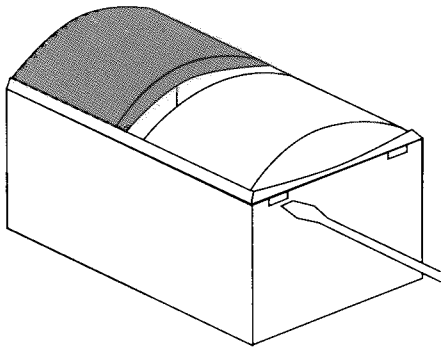
Guide to Repair ····· 2
General Exploded View ····· 4
Parts List ····· 4
Schematic Diagram ····· 5

# Guide to Repair

## ■ Removing Ornament Assembly

Insert a screwdriver into a notch at the bottom of the cabinet and lift the ornament assembly up a little. While holding the lifted ornament assembly, insert the screwdriver into the upper side of the cabinet, lift the ornament assembly up little by little. (Fig.1)

Note
During work, cover the cabinet and ornament with felt or soft cloth to protect them from dents and scratches.



Fig,1

## ■ Removing Front Panel

Remove 4 screws on the back of the ornament assembly. (Fig.2)

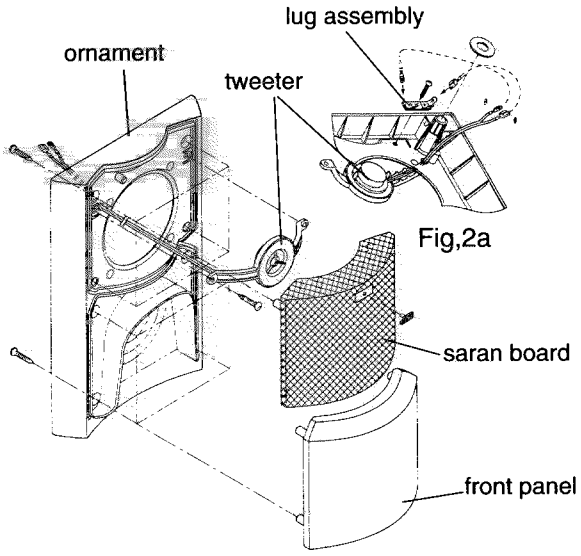
## ■ Removing Saran Board

Remove 4 screws on the back of the ornament assembly. (Fig.2)

## ■ Removing Lug assembly

Remove 1 screw on the back of the ornament assembly. (Fig.2a)

Note
During work, cover the cabinet and ornament with felt or soft cloth to protect them from dents and scratches.




Fig,2a

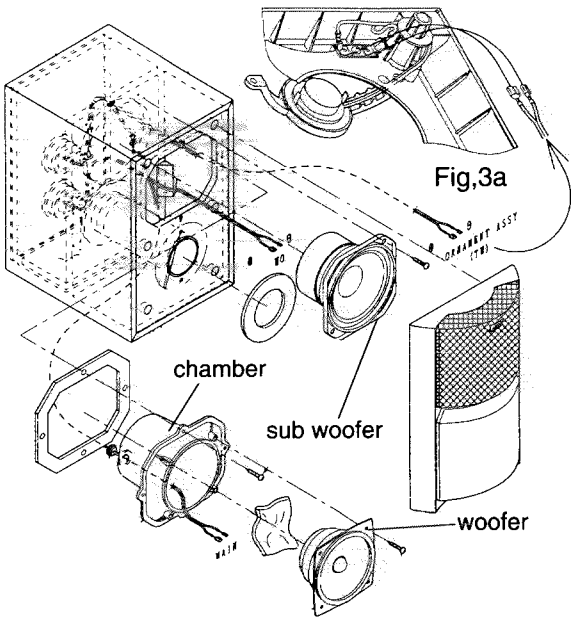
Fig,2

## ■ Removing Speaker Unit

(1) Removing tweeter unit
The tweeter unit is fixed on the front of the ornament. To remove the tweeter unit, remove the saran board at first, and then remove 2 screws holding the tweeter unit. (Fig.2)

(2) Removing Main Woofer Unit
The main woofer unit is fixed on the front of the cabinet together with the chamber. To remove the main woofer unit, remove it from the cabinet together with the chamber, and then remove the main woofer unit from the chamber. (Fig.3)

(3) Removing Sub-woofer Unit
The sub-woofer unit is fixed from the front on the partition board inside the cabinet. Remove the sub-woofer unit from the front of the cabinet after removing the main woofer unit and the chamber.(Fig.3)




Fig,3a

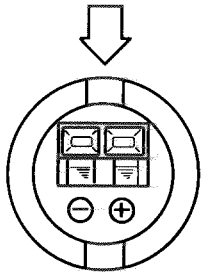
Fig,3

## ■Wiring

See Fig 2a,3a.

## ■ Removing the Speaker Terminal

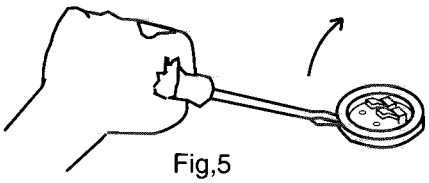
The speaker terminal, which located at the backboard, is provided with two cutouts(top and bottom).
(See Fig.4)
To remove the speaker terminal, alternately insert a flat screwdriver into these two cutouts lift the speaker terminal up and off(See Fig. 5).



Fig,4

Note:
When the speaker terminal is replaced, secure the inside of the new speaker terminal using rubber adhesive to prevent air leakage(See Fig. 6).

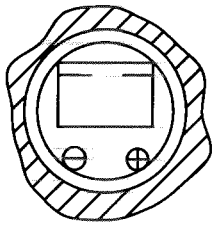
Note:
When doing the work, cover the ornament, cabinet, and speaker units with felt or soft cloth to prevent damaging them or leaving tool marks.



Fig,5

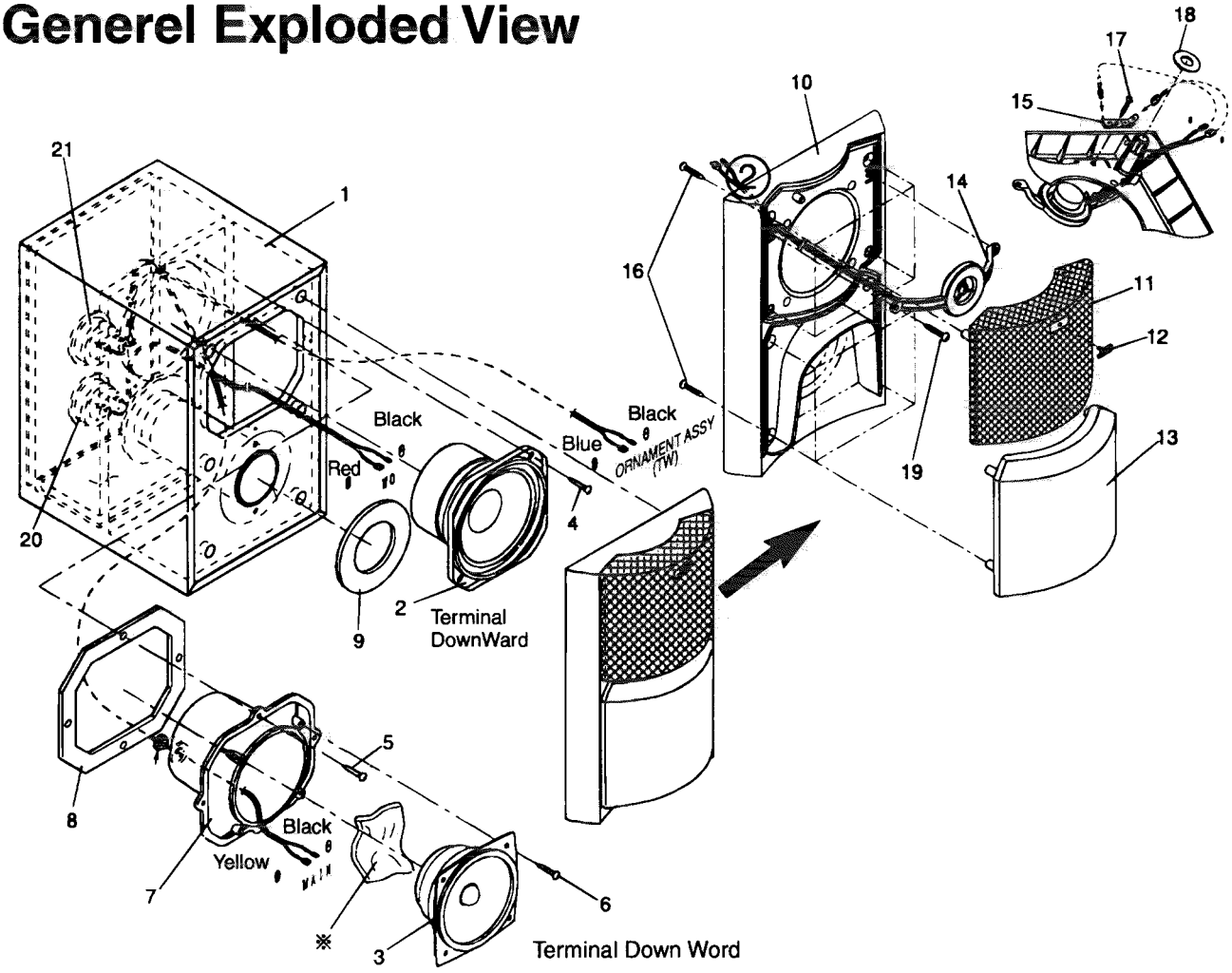
## ■ Replace the Network Assembly

The Network assembly can not be removed.If these need replacement, replace the Cabinet assembly.



Fig,6

# Generel Exploded View



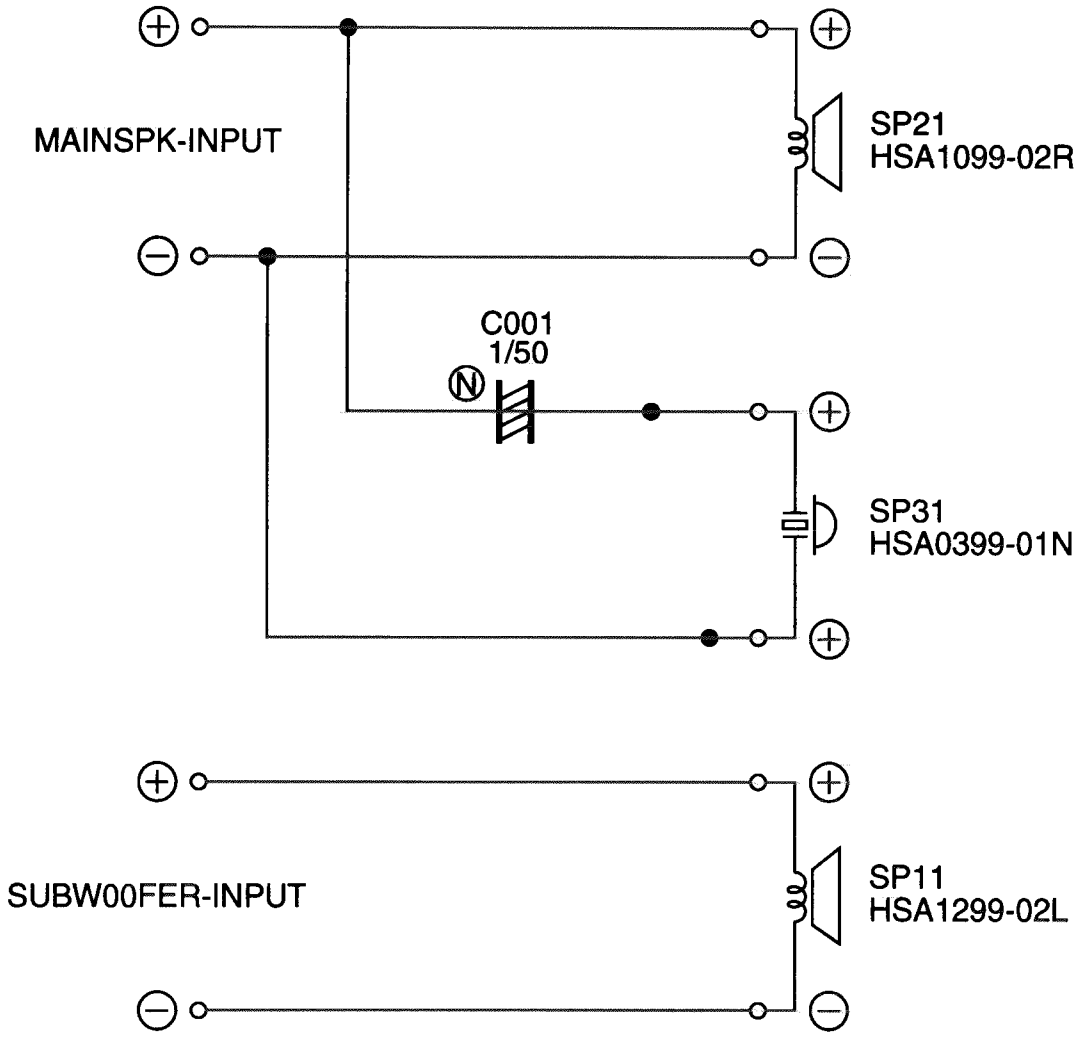

## ■Parts List

Block No. M1MM

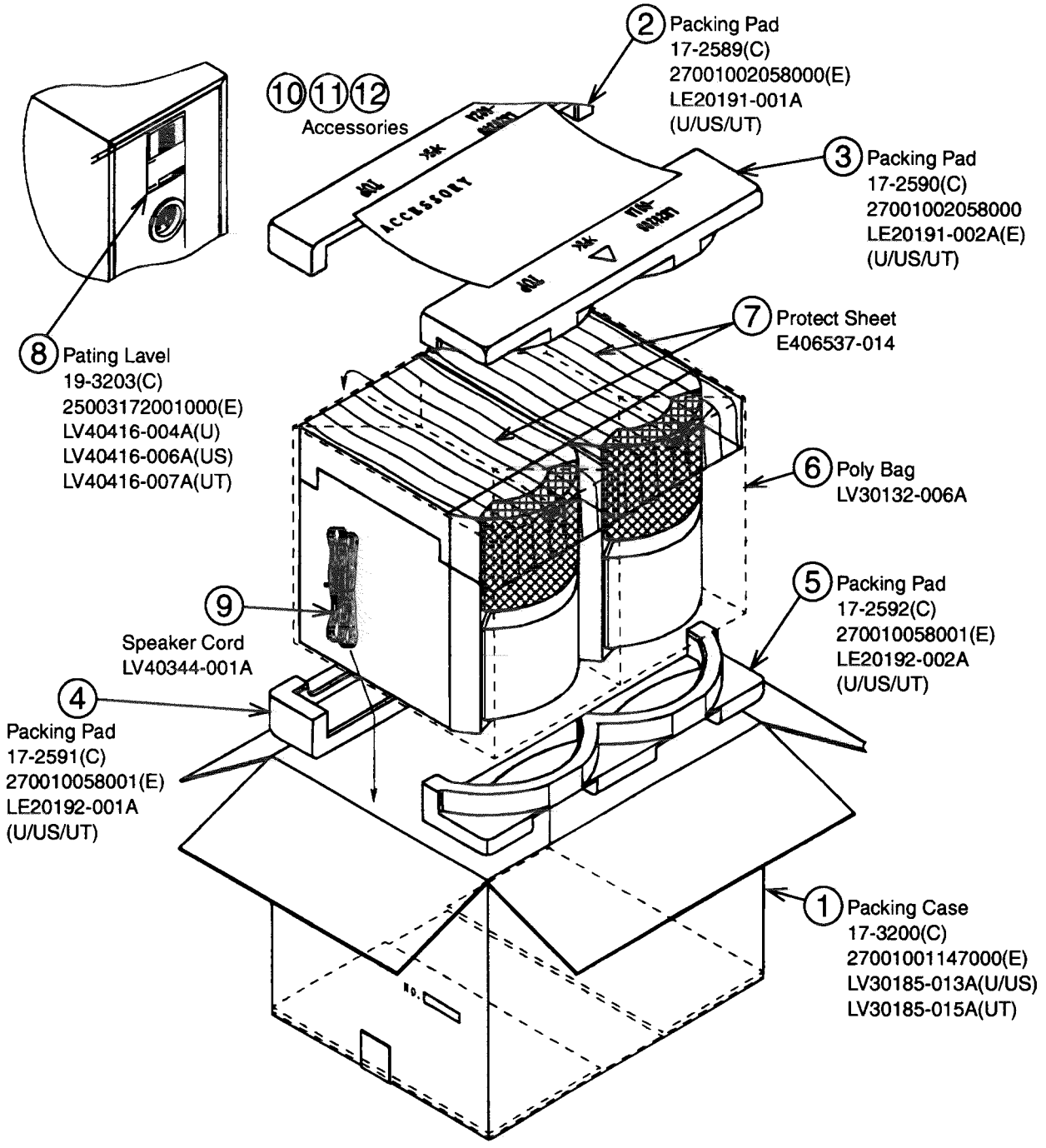
| ⚠ | Item | Part Number | Part Name | Q'ty | Description | Areas |
|---|---|---|---|---|---|---|
| | 1 | 17-356 | Cabinet Assembly | 1 | | C, J |
| | | 23001879030000 | Cabinet Assembly | 1 | | E |
| | | EZC-SP-EX90 | Cabinet Assembly | 1 | | U,US,UT |
| | 2 | HSA1299-02L | Speaker | 1 | Sub Woofer SP-11 | |
| | 3 | HSA1099-02R | Speaker | 1 | Woofer SP-21 | |
| | 4 | SDSA4020Z | Screw | 4 | | |
| | 5 | SDSA4016Z | Screw | 4 | | |
| | 6 | SBSF4010Z | Screw | 4 | | |
| | 7 | LE30455-001A | Chamber | 1 | | |
| | 8 | LE30457-002A | Spacer | 1 | | |
| | 9 | LE40220-001A | Spacer | 1 | | |
| | 10 | LE10107-001A | Ornament | 1 | | |
| | 11 | LE201160-002A | Saran Board Assembly | 1 | | |
| | 12 | E75939-001 | Mark | 1 | | |
| | 13 | LE20161-002A | Front Panel | 1 | | |
| | 14 | HSA0399-01N | Speaker | 1 | Tweeter SP-31 | |
| | 15 | E407923-001 | Lug Assembly | 1 | | |
| | 16 | SBSF4012Z | Screw | 8 | | |
| | 17 | SBSF3008Z | Screw | 1 | | |
| | 18 | LE40211-002A | Spacer | 6 | | |
| | 19 | SBSF4010M | Screw | 2 | | |
| | 20 | E03823-092 | Speaker Terminal | 1 | Red & Black | |
| | 21 | E03823-094 | Speaker Terminal | 1 | Blue & Glay | |

※ Acoustic Absorber are not available service part.

# Schematic Diagram



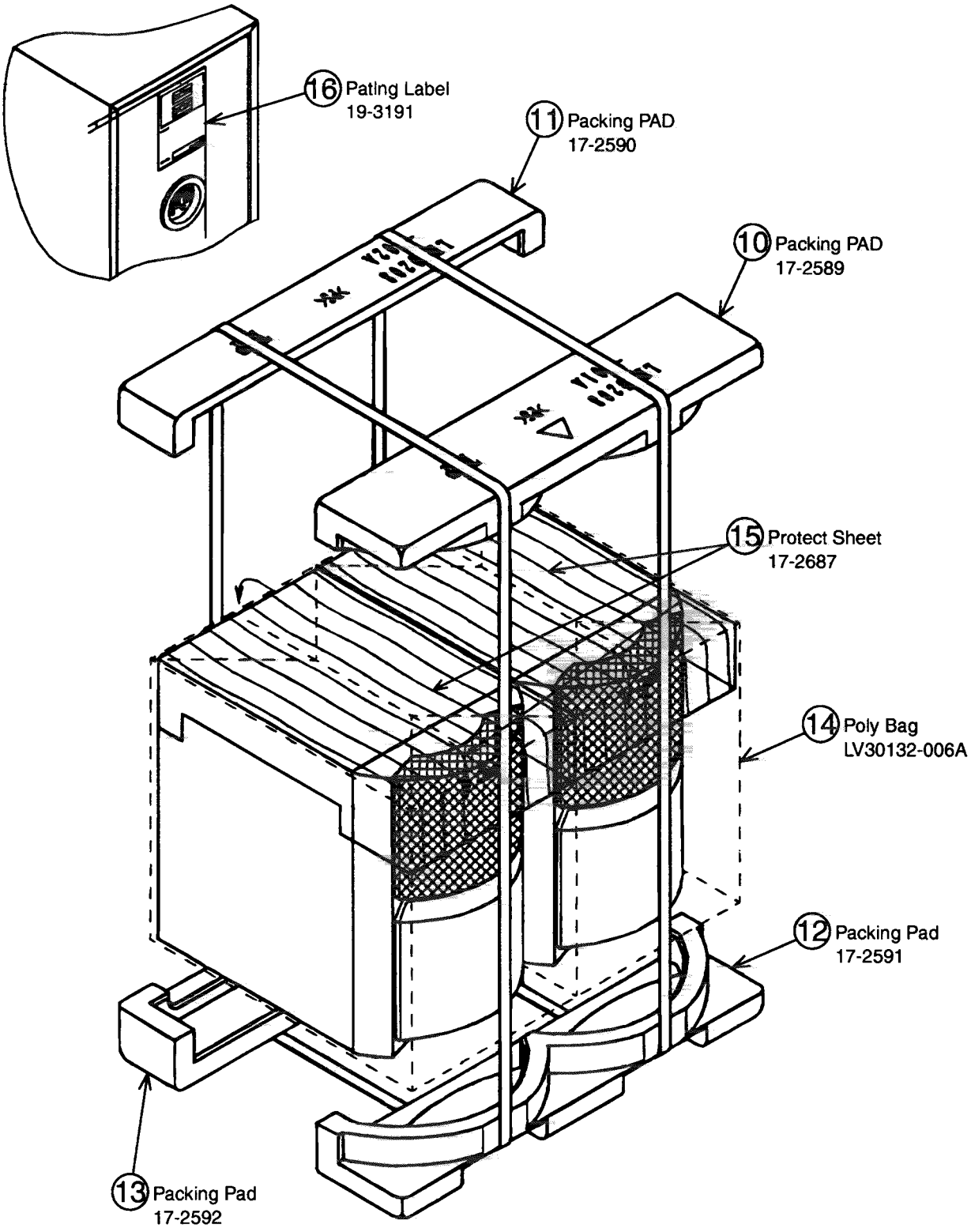
# Packing Materials and Parts Number (for C/E/U/US/UT Version)



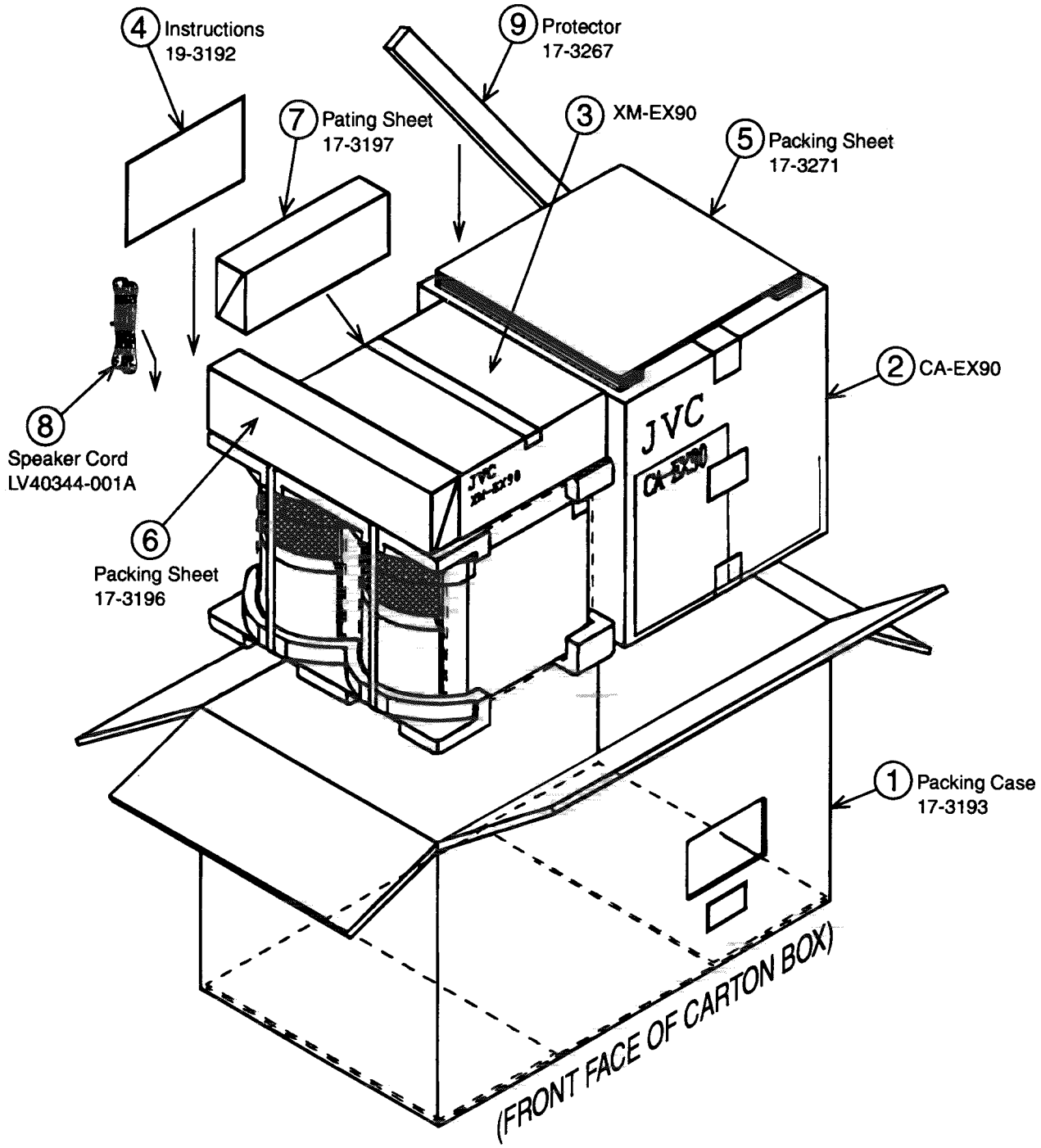

## ■Accessories List

| | Item | Part Number | Part Name | Q'ty | Description | Areas |
|---|---|---|---|---|---|---|
| | 10 | 19-3198 | Instructions | 1 | | C |
| | 10 | 25001167000000 | Instructions | 1 | | E |
| | 10 | LVT0041-002A | Instructions | 1 | | U,US,UT |
| | 11 | 19-3199 | Warranty Card | 1 | | C |
| | 12 | 19-750 | SVC Center List | 1 | | C |

# Packing Materials and Parts Numbers (for J Version)



# Paking Materials and Parts Numbers (for J Version)



■ACCESSORIES LIST

Block No. M2MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | A1 | QPC02503510P | POLY BAG | 2 | | |
| | A2 | LVT0096-001A | RX-EX90 INST BOOK | 1 | | J |
| | | LVT0096-003A | RX-EX90 INST BOOK | 1 | | C |
| | | LVT0096-007A | RX-EX90 INST BOOK | 1 | | UUBUFUSUT |
| | | LVT0096-002A | RX-EX90R INST BOOK | 1 | | B |
| | | LVT0096-004A | RX-EX90R INST BOOK | 1 | | EEN |
| | | LVT0096-006A | RX-EX90R INST BOOK | 1 | | EE |
| | | LVT0096-005A | RX-EX90R INST BOOK | 1 | | EN |
| | A3 | BT-52002-1 | WARRANTY CARD | 1 | | C |
| | | BT-54008-1 | WARRANTY CARD | 1 | | BEEN |
| | A5 | BT-51006-1 | REGISTER CARD | 1 | | J |
| | A6 | BT-20044G | SAFETY SHEET | 1 | | J |
| | | E43486-340A | SAFETY INST | 1 | | B |
| | | E43486-340B | SAFETY INST | 1 | #801～ | B |
| | A7 | RM-SEEX90EU | REMOCON | 1 | | UUBUFUSUT |
| | | RM-SEEX90U | REMOCON | 1 | | JC |
| | | RM-SEEX90RU | REMOCON | 1 | | BEEEEN |
| ⚠ | A8 | QMPP060-183-JD | POWER CORD | 1 | | UB |
| | | QMPS020-183-JC | POWER CORD | 1 | | UF |
| | | QMP1F00-183 | POWER CORD | 1 | | JC |
| | | QMP39F0-183 | POWER CORD | 1 | | UUS |
| | | | | | | EEEEN |
| | | QMP7530-183 | POWER CORD | 1 | | UT |
| | | QMP5520-183 | POWER CORD | 1 | | B |
| | A9 | QAM0027-001 | SIEMENS PLUG | 3 | | UT |
| | | QAM0060-001 | SIEMENS PLUG | 3 | | UUS |
| | A10 | QAL0014-001 | LOOP ANTENNA | 1 | | |
| | A11 | EWP201-011 | ANTENNA WIRE | 1 | | JCUUFUTUSUB |
| | | EWP503-001 | ANTENNA WIRE | 1 | | BEEEEN |
| | A12 | EWP302-023 | SIGNAL CORD | 1 | | |
| | A13 | EWP805-001W | PLUG WIRE ASSY | 1 | | |
| | A14 | QAM0121-001 | PIN PLUG CORD | 1 | | |
| | A15 | EWP902-048 | PLUG WIRE ASSY | 1 | | |
| | A16 | R6PPTT/2STS | BATTERY | 2 | | |
| | A17 | LV30258-029A | UB SHEET | 1 | | UB |
| | A18 | LV30258-027A | UB SHEET | 1 | | UB |
| | A19 | LV30258-028A | UB SHEET | 1 | | UB |
| | A20 | E3001696-172 | ENVELOPE | 1 | | B UB |

## ■ PACKING

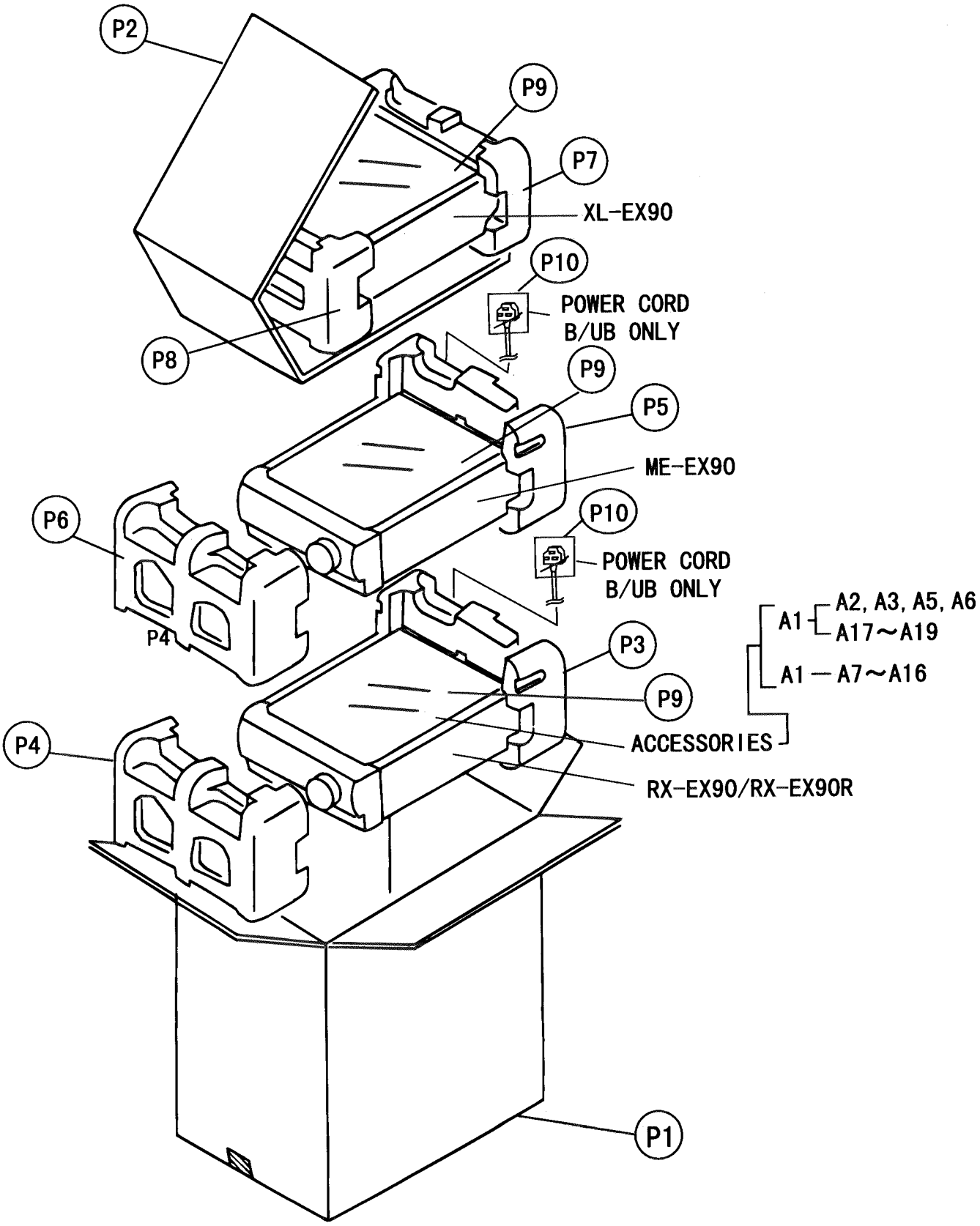
Block No. M3MM

| ⚠ | Item | Parts Number | Parts Name | Q'ty | Description | Area |
|---|---|---|---|---|---|---|
| | P1 | LV10060-004A | PACKING CASE | 1 | | C J |
| | | LV10060-005A | PACKING CASE | 1 | | U UB UF UT |
| | | LV10060-006A | PACKING CASE | 1 | | B E EE EN |
| | P2 | LV30332-001A | SHEET | 1 | | |
| | P3 | LE20337-001A | PACKING PAD(R) | 1 | | |
| | P4 | LE20336-001A | PACKING PAD(F) | 1 | | |
| | P5 | LE20337-001A | PACKING PAD(R) | 1 | | |
| | P6 | LE20336-001A | PACKING PAD(F) | 1 | | |
| | P7 | LE20358-001A | PACKING PAD(R) | 1 | | |
| | P8 | LE20357-001A | PACKING PAD(F) | 1 | | |
| | P9 | QPC03506015P | ENVELOPE | 3 | | |
| | P10 | QPA01001505 | ENVELOPE | 2 | | B UB |

# Packing Materials and Parts Number

Block No. M3MM

## J ONLY



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